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ABSTRACT

Intended for inexperienced teachers in higher education to be used in conjunction with a staff training program, information is presented on: teaching and learning principles; teaching methods; tutoring, counseling and student problems; student assessment; behavioral objectives; designing a course; and evaluation of teaching. Focus is on teaching methods, especially lecturing and small group discussions, which are discussed in some detail with emphasis on strategies for and evaluation of effectiveness. More independent teaching methods are also reviewed such as simulations, games, role plays, programmed learning, reading, guided study, peer teaching, practicals, and projects. The evaluation of teacher effectiveness is addressed throughout the book and separately at the end. Criteria for assessment are listed, evaluation models are reviewed, and two main areas of evaluation are examined, one concerned with processes, the other with outcomes. Sample evaluation questionnaires and checklists are given, an appendix with recommended readings is included, and references are listed at the end of each chapter. (JMD)

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Preface

New teachers in higher education tend to be appointed because of their demonstrated or potential achievement in the pursuit of excellence in scholarship and research. These traditionally valued characteristics are still highly prized particularly within the university culture, and the maintenance of high standards of scholarship and the pursuit of original research continue to hold a pre-eminent and overriding importance in the eyes of both individual academics and university promotion boards. It has been taken for granted that when it comes to the 'secondary' task of transmitting this scholarship and research to the next generation, the role of the lecturer is that of 'expert' or 'authority' and that the major responsibility for the learning process, the process of acquiring this expert knowledge, lies with the student. Indeed with the ever increasing effort required simply to keep up with his or her subject, let alone engage in research, an academic may well feel that there is little time to do more than present their own hard won scholarship to students through the medium of the traditional lecture. Many lecturers do, of course, attempt more than this, be it in the range of methods adopted, in the matching of methods with subject matter, or in the development of more reciprocal relationships with students, and so on. Some come to have reputations as outstandingly good teachers. But these tend to be individual efforts, very much determined by the personal interests and values of the individual lecturers. There is, as yet, little real evidence of a general acceptance by the academic teaching body as a whole of the need for a more committed and systematic approach to the analysis, development, and evaluation of effective teaching and learning.

It is therefore quite clear that in many of the more traditional departments of our universities and polytechnics, to ask new staff to dedicate themselves not to a few months of anxious concern, but to a lifetime of involvement in the matching of excellence in scholarship with a skilled teaching performance, is to ask for

a considerable sacrifice of time and effort which is unrecognised and unrewarded by many institutions (notwithstanding the declared policy of most university promotion boards to 'take teaching into account'). This problem is, of course, often accentuated by the various professional groupings to which academic staff belong. It is perhaps ironic that academics and scholars who set such great store by the analytical powers of the mind so rarely apply those powers when considering their own teaching, whatever the reasons for that reluctance may be.

This book has developed into its present style from a series of papers prepared by the staff of the University Teaching Methods Unit in the University of London Institute of Education as background reading for participants on its annual course for new teachers in higher education. Its target, therefore, is the recently appointed and inexperienced lecturer rather than old hands, and it attempts to address itself to their problems and needs in a new post rather than to those of the experienced practitioner and specialist. It has further been designed for use in conjunction with a course, and to provide a point of reference for discussions within that course, rather than as a teacher's handbook. This accounts for the comparative shortness of the book and the sketchiness of the treatment in some of the chapters. It has not been our intention to provide an exhaustive review and evaluation of all the topics treated, but rather a point of departure for hard-pressed new teachers who wish to get their bearings as quickly as possible. The volume is consequently well suited for use in conjunction with staff training programmes within higher education.

It should be remembered that effective teaching demands not only knowledge of what to do, but the ability to do it; and that requires practice. Moreover, the teacher is part of that process, influences it and is influenced by it. In order, therefore, to develop proficiency in many of the skills we discuss, the teacher must necessarily develop a further skill – to reflect upon his own activities in teaching, perhaps with the help of colleagues, of students, of video tape, or even a combination of the three.

Our concern for the needs of the new teacher has had some implications for the way the book is organised. The first chapter attempts to provide an overview in terms of a model for effective teaching and learning. Those readers who have a special concern for lecturing or other teaching methods, might start at Chapter 2 which deals with some of the anxieties and problems experienced

by lecturers, and continue with Chapters 3, 4 and 5. Chapter 3, rather than addressing itself directly to conventional group methods such as the seminar or group tutorial, looks at some of the underlying principles of small group teaching, ignorance of which often makes these conventional methods seem less useful than they might be. Chapters 4 and 5 look at a range of teaching methods where the student works more independently and autonomously, some of them well tried like practicals, some more innovative like games and simulations, some on the wane like programmed learning, some in the ascendant like 'personalised systems of instruction'. Chapter 6 deals with the much neglected and very important role of the lecturer as a helper and personal adviser to the student. Chapters 7 and 10 attempt to unravel some of the complexities of the difficult questions surrounding assessment and evaluation, both of students and of the teaching process itself. Chapters 8 and 9, on setting objectives and course design, which, according to the logic of the teaching and learning model of Chapter 1 perhaps ought appear before the chapters on teaching methods, have been placed towards the end of the book in the belief that the new teacher will usually be protected from questions of course planning and design until more experience and seniority has been gained. The immediate problem for most probationers is how to survive a more or less prescribed course of lectures, no matter how desirable it is to push a new lecturer into this position.

Perhaps the main omission from this volume is a section on audio visual aids, but after some thought it was felt that it was difficult to do justice to this important area in a book of this size. Readers interested in this aspect of a teacher's role are therefore referred to Flood Page, 1976, 'Technical Aids to Teaching in Higher Education', SRHE; MacKenzie, Eraut and Jones, 1970, 'Teaching and Learning an Introduction to New Methods and Resources in Higher Education', UNESCO; and Powell, 1969, 'Communicationed Learning', Pitman.

The process of writing this volume has been a collective effort by the staff of UTMU. Roy Cox was largely responsible for Chapters 7 and 10, David Warren Piper for Chapters 8 and 9, Gordon Miller for Chapter 6, David Jackson for Chapters 1 and 4, David Jaques for Chapters 2 and 5. Roy Cox and David Jaques worked jointly on Chapter 3. It has however been produced collaboratively with all UTMU staff advising and assisting each other

in their work. Responsibility for the final form and content lies with the editors, David Jackson and David Jaques.

We would like to gratefully acknowledge the advice, support, as assistance provided by colleagues, fellow tutors and course participants too numerous to mention. We owe a special debt however to Arthur Rothman of Toronto University for much detailed advice and in particular for the conceptual model outlined in Chapter 1; to Sinclair Goodlad of Imperial College, London for his significant conribution to the section on projects; to Anne Evans of Manchester Polytechnic, Dennis Fox of Trent Polytechnic, Peter Wexler of the University of Essex, Bob Poller of Queen Elizabeth College, London, and Allan Schofield and Sarah Robinson of UTMU for their detailed and helpful comments on earlier drafts.

Finally, we hope that readers of the book will engage with us in the sort of critical dialogue we advocate for lecturers and students. By sharing with us your critical assessments, perhaps we too can hope to pursue our own self improvement. Put simply: we welcome comments.

David Jackson
David Jaques

Teaching and Learning in Higher Education

In this introductory chapter we propose to describe a simple model of teaching and learning for higher education, derived partly from a number of theories of learning, and including currently accepted notions about the organisation of teaching for effective learning. There are two distinct aspects to the model. The first, learning principles, defines conditions that increase the likelihood of effective learning. These principles are based on the assumption that learning is essentially an *individual* matter and mainly revolve around the three centrally important ideas of motivation, reward, and practice in the learning process. There are, of course, many other ideas worthy of mention in any discussion of the principles of learning, but these three we consider to be the main points for consideration. The second aspect of the model, teaching principles, describes a way of organising teaching that complements these learning principles. Finally, in the latter part of the chapter we examine three typical teaching-learning settings using the language and logic of the model.

Learning is an Individual Matter

Learning is an individual matter, accomplished by the learner himself, at his own pace and in accordance with his own interests, values, competences, state of readiness, background, and opportunities for study and practice. This does not mean that teachers are unimportant in the learning process, but it does imply that to the extent that teaching takes account of the *individual* learner the chances of successful learning are enhanced. The teacher who takes the student as his starting point when deciding how to teach may well find himself thinking and doing things going far beyond the simple assumption that teaching is just a matter of presenting a formal lecture. He may well find himself having to spend much

time enquiring into and considering the character of his students prior to and during the preparation of his teaching material, and adopting a more flexible approach when making decisions about curriculum design and appropriate teaching methods. Obviously to consider questions such as these can be a major undertaking and may require the development of skills not traditionally associated with teaching in higher education.

The idea that learning is an individual matter has attracted increasing attention recently. Writers as varied as Paulo Friere (1972), Hampton-Turner (1971), Carl Rogers (1969) and at a different level of analysis Cronbach and Snow (1967) and Pervin (1968) have all emphasised the importance of considering the specific characteristics of *individuals*, and using them as the point of reference for learning. There is thus a growing literature devoted to questions of teaching in relation to 'learning is an individual matter', and familiarity with this literature can help the teacher to assess what is important; what might be appropriate starting points in his courses; and what teaching strategies might be most suitable in relation to these starting points.

Learning Principles

Many learning principles have been enunciated as a result of experimentation in the psychology laboratory. We cannot in this chapter discuss all of these, or even a part, and do justice to them, even if this were to be a worthwhile exercise. Rather we will briefly look at three broad principles – motivation, reward, and practice – which appear to be of special, and fairly general, importance.

The Importance of Motivation

In the context of teaching in higher education, it is important that teachers accept the responsibility for encouraging in students a state of preparedness, and a state of motivation appropriate to what has to be learned. Most young people come to college with a desire to learn, and this desire can be reinforced by ensuring that every student learns something which he regards as useful. This implies some attempt at matching the expectations and needs of the student with those of the teacher. Thus it is important for teachers, not only to ascertain what their students aspire to, are interested in, and find relevant, but also to ensure that the

students understand the objectives of their course, and to be explicit about how they recognise good work from bad. A post hoc rationalisation of why one piece of work is better than another is simply no use to the student who is trying to find out before he starts what he should aim at. Although a teacher in higher education will usually have the intellectual capacity to analyse what is required, he may also benefit from some guidance over methods of describing objectives and relating them to various educational procedures, and can perhaps be helped to communicate his aims to students at the outset of their course.

Apart from the *relevance* of course objectives to his own aspirations, a student's motivation is also likely to be influenced by the probability of achieving learning objectives in relation to his present level of competence. If he perceives a learning task to be far too difficult and beyond his ability, his motivation will suffer accordingly. For example, engineering students obliged to take a humanities option to 'round off their education' would be likely to be severely discouraged if required to analyse the minor Victorian novelists in an english literature course, or to devise a method of measuring 'horizontal décage' in a basic psychology course. Lecturers who teach such subjects to english or psychology honours students must take account of the interests, background, and time-for-study limitations that constrain students from other disciplines.

Motivation is also likely to suffer if students have ethical problems about aspects of their subject. A learner must be sympathetic to the learning objective on ethical grounds (Peters 1966). For example, if he considers genetic engineering as unethical, he may have difficulty learning the principles involved in altering a chromosomal anomaly. The teacher may be able to help by discussing the question with the student or by presenting a justification for such genetic interventions (if it exists) before beginning a discussion of the procedure itself.

Rewards and Punishment

Human beings are social animals and all of us will do a great deal in order to be liked by those around us. This is no less true of students than anyone else: accordingly social rewards and punishments, such as being praised, or becoming a member of a highly regarded group of people, or having one's name associated with some project which brings prestige among those with whom

we associate, are much more effective than those based on awarding different degrees of freedom, or amounts of work, or even money.

Reward is more effective than punishment. A teacher who emphasises the things a student has done properly and well and whose approving comments and behaviour are sincerely meant (and not mere tokenism) will have a demonstrably greater effect in enhancing the performance of the student than one who solely points out his errors. Yet it comes naturally to most of us to start by pointing out our students' mistakes, and we too often fail to explain and praise all that they do well. It is salutary to note down, in a set of corrected essays, the frequency with which negative comment is made, in comparison with mentions of good points well handled. Too great an emphasis on correction or error can result in the student planning his work so as to avoid criticism, rather than adopting a more positive policy of setting himself goals to attain. An examination system in which the student is required to gain a given mark in order to qualify, can, similarly, encourage a student to concentrate on avoiding those things which he must not do rather than pursuing to his best ability those things which he has come to learn. The sophisticated student, like the well trained athlete, soon learns how to take a hurdle with the least clearance necessary, and with the smallest possible effort. As well as the student doing the minimum amount of work, such an approach has been found to result in students becoming more anxious about examinations and actually turning in lower performances than they are capable of. Such a condition is associated with a *low transfer* of what is learned in the classroom to real life.

The sooner reward or punishment follows the activity to be learned, the more efficient it is. This is a very important variable, and can make a great deal of difference to a student's speed of learning and tenacity to work. A good teaching scheme gives students immediate knowledge of the effectiveness of their attempts (this is the principle of programmed instruction which presents a student with an easily assimilated amount of information, encourages him to test his knowledge, and bases the next step on his response). Projects, practical exercises, and discussion groups can also serve to give a student immediate feedback about his suppositions, skills, and the acceptability of his ideas. It also gives the student a chance to manipulate knowledge in a way that makes it meaningful to him. Many teachers pay insufficient attention

to the need for immediacy when informing students of their progress. A 'straight' lecture gives a student little opportunity to be faced with evidence about how much he has forgotten or what he has poorly understood, and it seems to be a characteristic of humans that we think we know and understand more than we actually do: we need to be faced with the evidence. The practice of collecting in a student's written work and returning it to him days, sometimes weeks after he has completed it is likely to impoverish the exercise as a learning experience.

Feedback is another type of 'reward' that can be used to give the student information about how well he has learnt in relation to educational objectives or indeed to his own expectations of what he should have learned. Arranging for a student to have knowledge of results which are a clear demonstration to himself of what he has learned and what he has failed to learn, is one of the strongest known techniques for promoting learning. There is much to be said for frequent tests which give the student private information about his own performance, especially if the teachers involved can resist the temptation to collect marks, or otherwise use the occasion to make an evaluation of the student's worth. Such tests are not primarily for certifying the level of performance reached. They are intended quite specifically to aid learning, and in this sense they are to be seen as a component of the overall teaching strategy, not as something apart from the teaching. The mark obtained is less important than the analysis of the strengths and weaknesses of the student's work, and attention needs to be paid to the exact information a teacher gives to a student concerning his work. The often cryptic remarks written at the end of an essay, or the coded mark or grade which may mean one thing in the teacher's scheme of values and another in the student's, do not give a student adequate guidance about his work and, even more important, what he needs to do in order to improve it. One student in a recent course evaluation, described how her essay was returned to her two months later via the department office. 'It had no comments on it, only a tick. I didn't bother to write any more essays in that subject.' In a survey of three hundred undergraduates of London University in 1967 (Warren Piper unpublished) 60 per cent of them agreed with the statement 'My tutor has never given me any idea of the standard of my work.'

Practice

Practice with feedback is an integral and vital part of the learning process and must be provided for in teaching and learning (Bligh, 1972). This principle can refer to two types of learning – psychomotor (the learning of manipulative skills) and cognitive (the learning of knowledge and the development of intellectual abilities and skills). When a psychomotor task such as typing, driving a car, or administering an intravenous injection is to be learned, the first requirement is that the activity be modelled and practiced. If the activity is fairly complex, it should be broken down and practiced in a series of steps. In addition, the practice of this complex activity will generally lead to more effective learning if spaced out with rest periods, rather than compressed (see Chapter 5 under 'Practicals'). When practice cannot be identical to the real life situation, the student should practice in a simulated setting (for example, student pilots practice in flight simulators). During practice, feedback must be provided to the learner in order to prevent the learning of incorrect actions.

Cognitive learning results from the practice of an intellectual task such as making a seminar presentation, solving a mathematical problem, or preparing for an examination. The principles governing the practice of these activities are similar to those appearing above concerning the practice of motor skills. For example, learning a complex cognitive task can be made easier if the task is broken down into several components (Gagné, 1965). But it would be surprising if this type of result held true in all circumstances with all students. There are undoubtedly situations and tasks where a more overall approach would be more appropriate and acceptable. Feedback and correction of errors early in practice will improve the learning of cognitive tasks. Practice which is properly spaced is appropriate to the learning of long and complex cognitive tasks (Bugelski, 1971). The maximum retention of information or a skill is obtained when practice is continued beyond the time when the student is first able to accomplish what is required. The length of time which training should be continued varies from task to task and can only be determined by experience. Adding one-third of the learning time is offered as a very rough rule of thumb.

Teaching Principles

The second part of the model, teaching principles, focuses on a possible way of organising teaching that supports the learning principles described above.

Educational Objectives

Many authors (eg Bloom et al, 1956; Mager, 1962; Rowntree, 1974) have argued persuasively for the specification and use of educational objectives for the organisation of teaching and the facilitation of learning. So much so that it is now conventional wisdom that the starting point for any contemporary approach to the planning of teaching and learning must lay considerable stress on the setting of educational objectives. While this is often a reasonable approach, and assuming that the many technical difficulties associated with the detailed specification of objectives can be overcome, further problems frequently arise in the translation of these objectives into programmes, courses, teaching methods and learning experiences. Some teachers who have accepted the view that nothing valuable can be achieved until objectives have been specified have spent considerable time writing the objectives and then 'seized up' not knowing where to go next, or else regarding the objectives as ends in themselves. It is not uncommon to find educational objectives and totally unrelated curricula. The problem of how to relate objectives to curricula is dealt with further in Chapter 9.

Curriculum

Curriculum can be thought of as, firstly, course content and, secondly, a set of teaching strategies, methods and learning experiences. An important feature of successful teaching is to obtain a close relationship between educational objectives and the curriculum, between what is expected of students, and the learning experiences that are provided to them. Achievement of compatibility between objectives and the curriculum, requires that the skills and knowledge constituting the correct performance of the behaviour specified by the educational objectives are identified, ordered and dealt with appropriately in the curriculum (Gagné, 1965). Furthermore, teaching methods and learning experiences will need to be selected bearing in mind the specific objectives and the nature of the course content, as well as the characteristics, experiences

and preferences of the learner himself. Much of the rest of this book will be concerned with taking up these issues of course design and choice of teaching methods.

Evaluation

Evaluation is a term generally used to refer to three areas of judgement: the students' performance, the teachers' ability, and the effectiveness of the course. Its main function is to contribute to the development and maintenance of effective teaching and learning. In this context evaluation provides feedback to students about how well they have achieved in relation to course objectives, thereby providing them with a basis for modifying how and what they are learning. It also provides information to teachers that they can use in deciding whether their objectives have been achieved or need to be modified, whether the curricula are appropriate to the objectives, and in deciding what further action is required of them in order to meet individual student needs.

Crucial to the acceptance of what has been proposed concerning evaluation is an understanding of the evaluation process itself. In its strictest sense the process involves the comparison of educational outcomes with educational objectives, a comparison that depends on the measurement of educational achievements. For this an understanding of measurement and the interpretation of data generated by measurement is required. However, there is a danger that an evaluation model based on predetermined criteria could ignore many of the most valuable and unpredictable aspects of teaching and learning, expecially those that specifically depend upon personal relationships and interaction. Some evaluators therefore favour a more qualitative approach to evaluation, focused upon the teaching and learning process (Parlett, 1972). These points are further developed in Chapters 7 and 10.

Thus these three teaching principles may be perceived as ways in which the teacher can

1 organise learning priorities
2 develop a curriculum that is designed to provide learners with appropriate and varied means of achieving the learning objectives and, finally
3 engage in evaluative activities that inform both learners and teachers of the success in reaching the learning objectives.

Together with the learning principles already discussed, these

teaching principles suggest a range of responsibilities that might be assumed by the teacher beginning with an understanding of learners as individuals and of the private, individual nature of the learning process, followed by an implicit educational contract covering educational objectives, content, setting, teaching methods and, finally, evaluation procedures.

We shall now attempt to examine this teaching-learning model in relation to three typical teaching settings. Cantrell (1973) suggests that dialogue should be regarded as the basic unit of instruction. He states "where two people are talking to each other, in genuine dialogue, there is a possibility for the exchange of information and ideas which can make the most efficient use of the capabilities of learner and the knowledge of the teacher." Drawing from Buber (1947) he continues, "in true dialogue it may be possible for either person to be teacher or learner in certain parts of the conversation."

One to One Teaching and Learning

One to one teaching and learning provides the maximum opportunity for individual attention and, therefore, for dialogue. Since the teacher has only one student to attend to, he can devote more effort to formulating appropriate teaching approaches. For example, by assessing the learner's interests, attitudes, experiences, and degree of readiness, the teacher may apply the most appropriate motivation arguments, select the most powerful rewards and establish the practice activities most relevant to the learner. In one to one teaching and learning, the teacher should be able continually to monitor the learner's level of achievement and modify his teaching strategies accordingly. Conversely, the learner is sure to get enough information of the state of his achievement relative to objectives in order to be able to change his learning behaviour.

One to one teaching and learning can take place with different styles of teaching and learning, for example, socratic, didactic, and problem solving. Having established students' interests, attitudes and knowledge of subject matter, the teacher can make decisions, often jointly with the student, concerning the selection of a style of teaching. The socratic method might be appropriate, for instance, with a student who had all of the information necessary to derive a correct solution of a problem but who required to reorganise that information in order to reach the solution. A

didactic style might apply in the situation of the student who had no information on the subject matter to be learned, and no foundations on which to build it, provided of course that following the didactic session the student was given the opportunity to restate and summarise the content (practice and feedback). Problem solving might be the style of choice in instructional situations in which both teacher and student shared information in common and each had additional independent information.

In the determination of an appropriate teaching style, considerations other than the level of knowledge displayed by the student will also be of great importance, but in one to one situations the maximal opportunity for mutual interaction and feedback will clarify fairly quickly what preferences both parties have with regard to an appropriate style. Ebel (1973) has argued that a major weakness of most learning environments is that they place too much responsibility for the success of learning on the instruction and too little on active participation by the learner. On the other hand Boulding (1967) insists that learning is something that the learner himself must actively seek. Teaching procedures which involve the student in some positive activity are generally more effective than those in which the student remains passive. One to one teaching and learning most effectively facilitates learning because it demands learner activity. However, all this said, the one to one situation can sometimes be rather inhibiting for both teacher and student and is therefore not always the best atmosphere in which to negotiate an appropriate style of teaching and learning.

Other forms of teaching, eg small group, seminar and lecture teaching are so organised that activity time is shared by many learners and a teacher; thus, individual learners are less active and therefore in one sense less likely to learn effectively. Nevertheless, in another sense, as indicated already, many students need the support of a peer group in order to overcome inhibitions about expressing themselves openly in front of a figure of authority. They feel exposed where they are the only ones who are, by the rules of the game, capable of making 'fools' of themselves.

Small Group or Seminar Teaching and Learning

For the purposes of this discussion a small group or seminar is

defined as having two, or more, but less than twenty students plus a teacher. In addition, it is expected that this type of teaching will encourage individual activity and student interaction as explicit contributions to individual learning (Walton, 1973). Problem solving, the learning of attitudes, difficult subject matter and complex technical procedures, are said to be efficiently learned in this setting (Henry, 1960). It is also claimed that small group teaching fosters social interaction and team work amongst students – a skill that is becoming more necessary in many work areas (Walton, 1973).

Successful small group teaching and learning presents the lecturer with a considerable challenge. The nature of the challenge can be more clearly stated by considering some of the problems presented by this learning setting in relation to the learning principles discussed above. The group rather than the individual can be seen as the unit of consideration – one describes group objectives, group dynamics, group characteristics, and group responsibility for whatever learning takes place. The problem for the tutor is that in spite of this he must recognise that individual needs have to be taken into consideration. The varied abilities, interests, attitudes, experiences etc of the group make far more difficult the process of deciding suitable motivational strategies, providing opportunities for practice, and identifying and administering appropriate rewards. Yet within a small group may lie the resources for the students' motivation and discipline in their own learning, provided the tutor is able to allow this to happen. It is possibly the feeling of many tutors that they must be the centre of attention or otherwise exert control in a group discussion that makes this task a more complex one than necessary. Their overriding concern to supervise the 'correctness' of the content can detract from their watching brief on the process of the discussion. As one tutor put it 'it's a matter of moving from thinking of what I shall say next to working out how I can pull the threads together or draw in the quieter members.'

Educational objectives must be appropriate to small group teaching and also appropriate to the small group being taught. Moreover, as the Chapter on Small Group Discussion will argue, the teacher may have to think beyond the bounds of the traditional seminar in order to achieve some objectives. He may need to structure the group interaction in different ways or vary his role as he sees fit. Curricula, while relating to the group objectives,

should capitalise on the opportunities for interaction among students and for equalisation of roles and reduction of formality between teachers and students. Evaluation has to relate to the group objectives and at the same time be sensitive to the achievements and needs of individual students. Evaluation should provide feedback to teachers, to the group, and to the individuals in the group.

Large Group Teaching and Learning

Lecturing to large groups is the most prevalent form of teaching in higher education and the most difficult to reconcile with the learning principles enunciated above. This difficulty is due primarily to the formality of the setting and the physical and psychological distances between the teacher and the individual student. If dialogue is the basic unit of teaching the conventional lecture typically provides little opportunity for it to occur. However, by focussing on the teaching and learning principles presented here, it may be possible to change practices to some extent so that opportunities for dialogue can improve and thereby increase the probability of learning in a lecture setting. For instance, we have suggested that a relationship exists between motivation and educational objectives. Dialogue between teacher and learner is a motivating condition that results in shared responsibility in defining objectives and justifying them in terms of their relevance, achievability, ethical position, etc. In a lecture setting that is a factor which the teacher must recognise, however difficult this may be.

Practice is necessary for learning to take place and therefore curricula should provide learners with the opportunity for practice of these skills, both motor and intellectual, defined by the objectives. In a lecture the opportunities for intellectual practice may be provided through the inclusion of questions both rhetorical and real, with time provided for answers. The literature suggests that most of the audience do respond cognitively to questions posed in this manner (Bligh, 1972). In addition, practice activities can be scheduled as an adjunct to the lecture as homework or as the function of small group sessions. Opportunities for reward (approval) and feedback can also be introduced into the lecture setting. For instance, rhetorical questions can be asked during the course of a lecture and the answers provided, or questions

along with time for answering can be posed and then answers drawn from a small sample of the audience possibly after they have been given a few minutes to discuss it with neighbours. In addition, short quizzes or tests on self-assessment procedures can be administered. These types of innovation, apart from breaking the monotony of the lecture, can be both personally more rewarding and provide rapid feedback to the student about his level of understanding.

Summary

A simple model for describing teaching and learning has been presented as a basis for discussion of teaching and learning in three traditional settings – one to one, small group, and a large group lecture. This does not, of course, exhaust the number of settings – others are discussed in subsequent chapters – but the teaching and learning model described, we believe, will be found to be useful for monitoring and evaluating teaching procedures in any setting. The model focuses on the individual learner and his characteristics, and presents three principles that describe necessary conditions for effective learning – motivation, reward and practice; and three principles that describe necessary conditions for the organisation of teaching for effective teaching and learning – educational objectives, curricula, and evaluation.

It is suggested that a teacher who is familiar with the language and logic of the teaching and learning model and can describe and evaluate episodes of teaching in terms of the model, will be capable of monitoring his own teaching in an educational context separate from its disciplinary content, and in so doing will effect better teaching and learning. For example, during the process of instruction, the teacher can ask himself 'What am I doing now that is educationally useful or constructive' and search for answers to that question in terms of each of the learning and teaching principles that are contained in the paper. It is proposed that dialogue is the basic unit of instruction and that to the extent that teaching and learning is characterised by such communication, learning will be enhanced. It follows that effective teaching and learning may be most easily demonstrated in a one to one format, and with increasing difficulties in small group and large group settings. In this context, it can be demonstrated that the model's

learning principles apply directly in the one to one situation, but are compromised to increasing degrees in small and large group settings.

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Lecturing

For many academics, the lecture is the accepted and proper way of 'imparting a body of knowledge', and it is probable that its acceptability in higher education is based partly on the precept 'teach as you were taught' and partly on the preordained existence of large groups of students, an institutional factor over which the individual lecturer may have no control. In terms of 'cost-effective' teaching the lecture clearly has distinct advantages but it should be recognised that, in common with all other teaching methods, it has its own problems and limitations. Bligh (1972) surveying the relevant research evidence concludes that whilst the lecture is acceptable as a means of transmitting information, it is less valuable than other teaching methods for stimulating thought, for personal and social adjustment and for change of attitude. In other words, the lecture is possibly best reserved for those objectives at the lower end of Bloom's taxonomy of cognitive objectives (see page 116). This is not to belittle the importance of the lecture, for a great deal of the required learning in higher education, to judge from examination papers, appears to be of this kind.

It is worth noting in respect of lectures that students, when listening to a discourse within their range of understanding and taking the customary notes, are rarely able to recall more than 40 per cent of the essential information of the lecture at its conclusion, and only one half of that a week later (McLeish 1968). The fact that students may regularly attend lectures is no evidence of their effectiveness as a teaching tool. For many students attendance at lectures may be the only way they can find out what subject matter they will have to learn in order to succeed on the course. Many courses rely too heavily on the lecture method often to the detriment of the student's learning. As the Hale Report comments "over indulgence in lectures should be classed as a drug of addiction in relation to both giver and receiver." This said, however, many teachers in higher education have little alternative but to give a formal lecture when faced with a large class of

students in a room whose physical structure implies a theatrical performance rather than an intellectual dialogue. Furthermore there are occasions when expository teaching is the most appropriate technique whatever the possible alternatives. Such occasions may be when the sort of information which has to be transmitted is either unpublished, needs to be organised in a new way, or where it constitutes the outline or summary of a course. Collier (1968) describes the way in which lectures can also be used to conclude a scheme of syndicate studies (see page 55). In this context the lecture is used to summarise a set of reports submitted by students, and correct misconceptions and gaps in their work.

Lest it appear that this chapter is devoted to an outright rejection of the lecture as a viable teaching method, it must be said that lectures can be a source of great inspiration to students; but this is probably the exception rather than the rule. Another recognised advantage of the lecture is the exercise and discipline it demands of the lecturer; but this does not necessarily work to the benefit of the student. In sum, then, it can be said that although the lecture has its distinct advantages when done well, the big problem is that it tends to be used uncritically and without full recognition of the concomitant problems. This chapter is therefore devoted to an examination of these problems and some suggestions for overcoming them. It will also indicate how the lecture might best fit into an effective teaching programme.

Common Problems in Lecturing

These may be grouped for convenience under three general headings: those problems concerned with the lecturer's subjective feelings; those concerned with the communication process; and those concerned with the preparation, organisation and presentation of the lecture. None of these categories is intended to be exclusive; in fact all are inter-related.

The lecturer's subjective feelings

Nearly all lecturers experience nervousness and anxiety when meeting an audience for the first time. The lecture situation is one which places the lecturer in the role of *authority* figure both as subject matter expert and as controller of student behaviour. It is also a highly public activity in which the lecturer is exposed and vulnerable. Intrinsically the communication channel tends to

be one way, with only limited opportunities for *feedback* from students about their problems, perceptions, needs, etc. It is difficult to know whether one is being understood when the only activities expected of the student are looking, listening and note taking. Moreover, the expectations and frames of reference of both staff and students can get seriously out of phase with little chance of correction; the students are thus easily *alienated*. In these circumstances it is perfectly understandable that lecturers should be anxious, fearful of criticism, doubtful about their ability to cope, concerned lest they become tongue-tied or lose the thread of an argument, and afraid lest they be unable to answer questions.

There are a number of possible ways of handling nervousness. One is to remind yourself that it is a good sign – an indication that you are concerned to respond well to your audience. Nervousness may also be lessened by tackling the problems of authority, lack of feedback and alienation described above. If students and lecturer are involved in a question and answer session from the outset or if the lecture is interrupted with a period in which students are asked to answer short questions in 'buzz' groups (see page 55 for an explanation of this term), then this could help reduce the lecturer's uncertainty about student needs and comprehension. (Incidentally buzz groups would also have the effect of relieving the lecturer from the glare of the limelight as well as providing him with feedback.) Concern about becoming tongue-tied is *not* generally helped by writing copious notes on paper. It can, however, be alleviated by preparing notes beforehand on an overhead projector transparency and talking from these. This also reduces the *alienation* problem in that students and lecturers alike are looking at the same aspect, namely the OHP screen, at least for part of the time.

Communication Problems

Probably the most personal of all lecturing problems is delivery. Everyone has his or her idiosyncratic style and it is therefore difficult to say what techniques are most effective. However, it is apparent that if students are to reconstruct what a lecturer is saying within their own frames of reference then the lecturer *must not go too fast*, and must *use pauses* to give students a chance to think. It should also go without saying that a lecturer should be *audible*, yet it is surprising how many bury their heads in their notes. A quick question to the audience at the beginning to ask

whether everyone can hear is a useful check when speaking in a strange room, but it may be necessary to repeat such checks in order to avoid slipping back to a quieter delivery as the lecture progresses. One way round this problem is to ask students to hold up a piece of paper when they can't hear (though this is open to hilarious abuse), but if the lecturer is maintaining regular eye contact with all the students he will soon recognise the symptoms of poor audibility.

Inaudibility may be due to a number of factors in voice production. The voice like other musical instruments can be considered as three functioning parts. The breath passes through the vocal cords and produces a note. The note then passes through the pharynx, the mouth and the nose, each of which acts as a resonator. A good tone quality depends on the balanced coordination of these resonators: a predominance of pharynx resonance causes a muffled chesty sound; a predominance of mouth resonance a hard authoritarian tone; and too much nasal resonance, a thin reedy tone. These undesirable effects are usually due to tension in the throat, tongue or jaws. This tension may in turn be due to nervousness about lecturing or something psychologically more deep-rooted. It may be alleviated by simple relaxation exercises or by the techniques used in yoga, mime and the Alexander Method. Audibility is also frequently lost due to the slurring, clipping or swallowing of words. Helpful exercises in improving diction may be found in the book by Gohdin, Mammen and Dodding. Video playback can be most valuable in recognising such defects, if not in remedying them.

Holding the interest of the student does not, of course, depend solely on the lecturer's audibility and speech. For good communication it is essential to make frequent glances around the audience, allowing one's eyes to rest briefly on individual students. Also general manner and bearing are important, in that they may give students an overall picture of the lecturer's disposition towards the subject and towards lecturing. An enthusiastic expression, a confident gesture, a purposeful step can all lend great weight to the words, while on the other hand a bored expression, an inhibited gesture or fidgety movements can be enormously distracting and off-putting.

The Preparation, Organisation and Presentation of the Lecture

In preparing a lecture it would seem logical to decide first of

all what your aims and objectives are for the period, within the context of the course. These will be determined partly by the aims of the course, partly by the student's knowledge prior to the lecture and partly by what the student will want to use the information for, eg practical class, essay, project etc. One such aim might be 'to introduce students to the concept of XYZ' and an objective might be that 'by the end of the lecture the student should be able to describe what is meant by XYZ and list some examples of present practice'. The content can then be selected in the light of these aims and objectives. Key points might be determined and just enough detail to support these points included in order to underline them and bring them to life, five to seven major points being the suggested maximum. In working out the detail, bear in mind the time available for the teaching session, and other aspects to consider include the varying interest, experiences, and motivations within the audience.

The main object of this preparation phase is to make the lecture as intelligible as possible to the students. Here is a list of suggestions on how this might be achieved, given by Gregory (1975) (with some additions):

1 show concern for the how, the why, and the possible implications, as well as what;

2 vary the stimulus fairly frequently, particularly by switching between the aural and the visual, and even, if possible, bring in touch, taste and smell;

3 relate points to students' personal experience and to their previous learning in the same or another field;

4 link content to a recent occurrence or discovery, making its recency explicit;

5 use comparison;

6 introduce contrasting and, where possible and appropriate, controversial viewpoints;

7 refer to recent and current literature, and if relevant, to old literature;

8 change the student activity, between listening and doing, eg by combining exposition with the asking and answering of questions (at different places in the lecture the teacher might even ask questions on predetermined points, to check or develop further the students' understanding);

9 challenge students to agree, to disagree, and to suggest their own hypotheses;

10 put forward a hypothesis which the students themselves are left to argue after the lecture, or discuss at a subsequent discussion group;
11 pose problems, especially those demanding independent thought, that are not answered in the lecture;
12 use the blackboard and overhead projector to emphasise key points and diagrams;
13 periodically indicate that one part of the topic has been completed and another part is being begun;
14 give alternative explanations of difficult points in order to accommodate the different perspectives of the students;
15 incorporate such audio visual aids as specimens, slides, duplicated tables, film extracts, and sound recordings;
16 cite illustrative examples and draw analogies;
17 use quotations particularly from authorities;
18 use anecdotes (personal and other);
19 use humour (beware of humour at a student's expense, unless the student really merits it);
20 use a major change of activity during the course of the lecture, eg a short test on points covered so far, or two or three questions to be discussed by the students, grouped in pairs, with feedback to the lecturer (see Bligh, 1972);
21 switch the mood, eg between the serious and the humorous, thereby giving the audience a chance to relax, even momentarily.

Patently these suggestions will not all be appropriate to every lecture situation, but new lecturers may find them a useful source of ideas.

If one purpose of the lecture is to help students organise their ideas, then it would seem that some attention should be paid to the way in which the lecture material is itself organised. In particular, it should be remembered that although the lecture itself is necessarily presented in a linear form with respect to time, relationships between many of the ideas may demand spatial representation and cross referencing. The way the lecture material may be organised will depend both on the subject being taught and on the personal style of the lecturer.

Chaining is one of the most popular forms. A sequence of ideas or arguments is presented in either a logical or chronological form. However, the sequential links might not always be picked up by the student and it is usually wise to adopt devices such as stating

the final stage or goal of the lecture at the beginning, clearly indicating the progression from one stage to the next, and periodically taking stock. Alternatively, it may be appropriate to try to simplify and clarify a complex topic by constructing a classification. Typically this takes the form of a *hierarchical classification* in which items are put together in groups and sub-groups with an unifying feature as the heading. For the purpose of clarification, links and inter-relationships are usually ignored. This in itself can make the experience boring for students. Moreover, both the chaining and classification type of lecture are usually presented as 'given' ways of looking at the topic, as an easy means of assimilating knowledge, rather than as problems in themselves.

Some lecturers would argue, therefore, that the only effective way to avoid such boredom in a straight lecture is to present the material in a *problem-centred* form. A problem (which could even be how to classify the material) is stated at the beginning and the lecturer proceeds to adduce information in order to form hypotheses as tentative solutions to the problem. The problem may be left unsolved for students to continue thinking about. In this approach it is essential that the problem be stated clearly in terms which students understand, possibly with the help of one or two illustrations or examples. A variation of the problem-centred lecture occurs when a hypothesis is first proposed and then tested against sets of observations. Sometimes this progression may be reversed by moving from the information to a hypothesis which appears to explain it. Other techniques include the *comparing and contrasting* of items (a form of 'paired' classification), the *logical dichotomy* (eg are lectures useful if yes, in what ways – if no, what alternatives are there – and so on) and the *network* in which a complex set of inter-relationships is demonstrated, often in diagrammatic form. It is probably worth restating that if the organisation of the material is seen as a problem in itself, then the students' interest and thinking processes are more likely to be aroused. For a fuller explanation of all these approaches see 'What's the Use of Lectures' by Donald Bligh, pages 61–75.

Two personal styles which may be superimposed on any of the above techniques are the 'listen to me thinking' and the 'let's look critically at these arguments' approaches. In the former the lecturer gives an extempore talk and thus risks making errors and pointless digressions; in the latter the lecturer may invite the students to join her in looking critically at a prepared set of notes

which may be revealed in the form of a handout, or written out on an overhead projector roll.

Having worked out the plan of operation it may be a good idea to think about how to introduce the lecture and how to conclude it. The introduction should both incline students to listen (emotional set), and also set their minds in the desired direction (intellectual set). The former is frequently achieved by linking the lecture to the previous learning experience of students or to an otherwise familiar topic. You may on the other hand rouse students' curiosity by demonstrating something unfamiliar or novel to create uncertainty or disequilibrium, or by asking provocative questions (but not of individual students). Students' thinking may also be set in the appropriate direction by stating clearly what you intend to do and perhaps offering an appetiser for the anticipated feast of knowledge by way of an illustration or brief case study. Both emotional and intellectual set will probably have to be reestablished during the course of the lecture.

Finally, the conclusion should receive particular attention. Many lecturers prefer to give a neat summary in order to generate a sense of completion to the lecture as well as refreshing students' memories. However, you may find it equally valuable to give the concluding section an open-ended slant by asking unanswered questions related to the lecture content, or by linking the lecture to other teaching sessions. In both cases the intention is to create in the students a desire to complete something as yet unfinished.

Common Problems for the Student

Possibly, and even hopefully, if teachers are alert to the sort of problems students commonly experience during lectures, they can adopt tactics to alleviate them and thus better achieve some of their goals. Perhaps the most direct problem to tackle is that of *attention*. You will be considered a very gifted lecturer if you can hold the attention of your students for more than twenty minutes. Yet many lecturers speak for forty minutes to an hour or even longer without allowing the students a change in their activity of listening and note taking. Often something as straightforward as a simple break in a lecture (eg the lecturer spends two minutes opening some windows) helps attention regain its former level. Varying the mode of presentation is another way

of maintaining attention, and here audio visual aids can be of great benefit. But the most effective means of keeping a lively interest in proceedings is in fact to combine the two principles of a break in activity and a variation of the stimulus by requiring the students to be active in thinking about and responding to questions put to them. Direct questions like 'In what way does XYZ illustrate the principle of ABC?', especially if directed at individuals, are, of course, likely to evoke an embarrassed silence. Better by far to ask a less specific question, eg 'has anyone any experience of XYZ in their work or life' or to request students to turn to their neighbours and discuss the question for two minutes before attempting to respond. As already mentioned, these devices enable both lecturer and student to achieve *feedback* on how well the lecture material has been understood. With smaller groups (less than thirty, say) many lecturers conduct a sort of step-by-step discussion rather than a formal lecture (see page 54).

Another device which may be used has the added benefit of testing all the students. This is to hand out, or project via an overhead projector, a short series of objective test items (see page 100). The students can quickly answer these and the lecturer can then ask for a show of hands for supporters of each possible answer. Supporters of different answers can be asked to justify their decision and argue across the lecture theatre. The whole operation need take no more than ten minutes. Testing the students' understanding can also help them in recalling the content of the lecture, and students who are tested immediately following a lecture are likely to recall material better when they are subsequently tested than those whose first test was one or more days after the lecture. On the other hand, students can also find themselves forgetting material due to *interference* of the end of one lecture with the beginning of another, should the two be timetabled to follow immediately upon one another. It is probably a good idea therefore to end one lecture five minutes early and to begin the other, at least in formal terms, five minutes late.

In lectures which are part of a course some thought should be given to how the lecture relates to the other elements of the course. It can help students enormously to be given a task to prepare or a couple of questions to answer in anticipation of the lecture. Discussion groups before the lecture begins may also be of benefit for the same reason – that they prime students' interest and curiosity (see Bligh et al, 1975).

Finally, although it may appear banal, students often need guidance on note taking. If they are scribbling notes the whole time hen they are unlikely to be thinking about the arguments the lecturer is attempting to communicate to them. Handouts containing skeleton notes can alleviate this problem as can a brief demonstration of the sort of note-taking techniques which encourage the student to think about the material as he writes it down (see Buzan, 1974).

A Strategy for Improvement

As has already been suggested, the lecture as a teaching technique is not suitable for many educational purposes, and it is not every teacher who naturally possesses the personal skills required for its successful practice. Perhaps, therefore, one should always ask oneself: 'is the lecture appropriate for what I want to achieve?', and, 'knowing my own range of abilities, and given that alternative methods are feasible, is the lecture the best technique for me?' However, given that the lecture *is* the appropriate technique for achieving one's objectives, or is otherwise determined by the number of students or the room, what strategy can one adopt for self improvement in lecturing technique?

There are at least three sources of self knowledge: yourself, colleagues, and students. The use of video recording has increased the opportunity of studying one's own performance carefully. You can watch a video tape of part of a 'live' lecture you have given, or of a specifically prepared short talk, being played back either in private, with a helpful colleague (who may be happy with a reciprocal arrangement) or even with one or two students. However, self knowledge does not necessarily lead to self improvement. To achieve this it may be of benefit to adopt a microteaching approach. Typically this means preparing a brief talk in which you practise a small number (usually two to four) of the type of skills and techniques described in this chapter (see questionnaire at end of this chapter), and then evaluating your practice of them on video playback. The same talk may then be repeated immediately in order to practise the skills again and, hopefully, to improve them. Of course, a short talk is never the same as a full lecture and video playback is a limited substitute for reality. In order to understand better how they come across to those

on the 'receiving end', some lecturers like to obtain further information from students by such methods as handing out and collecting evaluation questionnaires (an example of which is at the end of this chapter). It might well be thought that this procedure was fraught with hazards. However, the general experience of those who ask for student feedback on their teaching is that the opinions expressed are not only helpful but responsible and frequently supportive. (Though it should be said that this evidence may be biased as it may be that only those who have reasonably good rapport with students would be willing to engage in such a venture!)

Finally, it must be noted that despite any appearances to the contrary in this paper, the ability to lecture successfully is an idiosyncratic art, coming easily to some and constantly eluding others. However, the worst thing that can happen is that one succumbs to the temptation created by the lecture situation to practise a one way communication: that one eliminates anxiety by ignoring the problems of authority, alienation, and lack of feedback (which of course will still exist for the student). Probably the best way of overcoming all these problems is an honest dialogue between yourself and students about what they are learning. This is the sine qua non of effective teaching whatever the medium.

Summary

To many people, lecturing symbolises what teaching in higher education is all about. Although the lecture has many assets it is often used uncritically and frequently presented badly. Lectures are best reserved for transmitting information rather than stimulating thinking or changing attitudes. They can also be used in a subordinate function to student task groups (syndicates). However, physical features of rooms and constraints of timetables may make the lecture as a primary teaching tool inevitable.

Common problems in lecturing may be grouped under: the lecturer's subjective feelings; the communication process; the preparation, organisation and presentation of the lecture. Anxiety probably derives from the lecturer being placed in the role of *authority*, difficulty in getting *feedback* on students' understanding, and *alienation* among students resulting from disparate expectations. These may create a crippling anxiety in the lecturer but can be minimised by various devices of which short periods of

discussion – buzz groups – among the students is probably the most valuable. Communication problems are most frequently connected with audibility, pace, pitch, eye contact and projecting one's enthusiasm.

In preparing a lecture one should first consider what one wishes the student to learn, limit the content to between five and seven key points and organise the material in a way appropriate to oneself, the subject and the class. A *problem solving* approach is often the most successful. In presenting a lecture, the teacher should be aware of the need to keep the level of attention high by varying the stimulus which may be achieved by changing the mode of presentation, by giving students a two minute break in the middle, or by inviting active participation in the learning with a quick objective test or a 'buzz' session. It is also a good idea to rouse students' curiosity at the beginning and periodically during the lecture as well as offering students something to 'chew over' at the end.

The lecture as a teaching technique is not suitable for many educational purposes and it is not every teacher who naturally possesses the skills required for its successful practice. But improvement can be sought through use of video playback, pairing with a colleague for mutual criticism, or using evaluation instruments like the following questionnaire.

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Evaluation Questionnaire for Lecturers

This questionnaire is designed to help your lecturer adapt to student needs. Could you please give your assessment of the lecture(s) he or she has given you by circling the appropriate number on the five point scale below. Rate each item as thoroughly and as carefully as possible. First give your rating of the lecturer for the first five underlined general statements A, B, C, D and E. Then complete the remaining statements adding your comments wherever appropriate.

Class:

Date:

	Definitely	Quite a bit	Middling	Only somewhat	Not really	Not applicable
The lecturer						
A Maintains my interest to the end of the lecture	1	2	3	4	5	0
Captures my interest at the beginning	1	2	3	4	5	0
Effectively sets the scene for the lecture	1	2	3	4	5	0
Varies the mode of presentation	1	2	3	4	5	0
Stimulates activity in the audience	1	2	3	4	5	0
Ends the lecture in an interesting way	1	2	3	4	5	0
Links the lecture to other parts of the course	1	2	3	4	5	0
Relates points to students' personal interests	1	2	3	4	5	0
	1	2	3	4	5	0

Comments:

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	Definitely	Quite a bit	Middling	Only somewhat	Not really	Not applicable
B Interprets the material clearly	1	2	3	4	5	0
Is clear and understandable in his/her explanations	1	2	3	4	5	0
Makes good use of examples, illustrations and quotations	1	2	3	4	5	0
Makes effective use of visual aids	1	2	3	4	5	0
Periodically takes stock	1	2	3	4	5	0
Stresses important material	1	2	3	4	5	0
Makes it clear what the purpose of the lecture is	1	2	3	4	5	0
Gives alternative explanations of difficult points	1	2	3	4	5	0
	1	2	3	4	5	0

Comments:

C Makes it clear what is expected of the students during the class	1	2	3	4	5	0
Clarifies the value of note taking during the lecture	1	2	3	4	5	0
Encourages audience participation	1	2	3	4	5	0
Gets feedback on student understanding of the subject	1	2	3	4	5	0
Makes it clear what work might be expected of the student after the lecture	1	2	3	4	5	0
	1	2	3	4	5	0

Comments:

D Communicates effectively	1	2	3	4	5	0
Makes effective use of voice	1	2	3	4	5	0
Uses gesture and body movement effectively	1	2	3	4	5	0
Makes regular eye contact with me	1	2	3	4	5	0
Has good rapport with the class/group	1	2	3	4	5	0
Is lively	1	2	3	4	5	0
	1	2	3	4	5	0

Comments:

E Chooses and organises the material well	1	2	3	4	5	0
Presents material appropriate to my needs and interests	1	2	3	4	5	0
Organises the material in a form appropriate to the subject matter and the objectives	1	2	3	4	5	0
Stimulates my interest in the subject	1	2	3	4	5	0
Presents about the right amount of material for the time allowed	1	2	3	4	5	0
	1	2	3	4	5	0

Comments:

F Any other characteristics you wish to rate (please state)						
	1	2	3	4	5	0
	1	2	3	4	5	0
	1	2	3	4	5	0

Please list any irritating or distracting habits of the lecturer:

It would help if you could let your lecturer know if there is something in his/her lecture you believe he/she does especially well:

It would also help if you could state specific things he/she might do to improve his/her lecturing:

Small Group Discussion

The opportunity to come together in small groups for the interchange of ideas, scholarship, theories and insights provides students with one of the most important learning experiences higher education has to offer. Traditionally this has been held one of its most central and historic functions yet it is probably fair to say that its role has never been adequately developed.

To quote the Hale Committee Report on University Teaching Methods (1964) "All the evidence is at one in showing a strong student demand for more teaching by tutorial and seminar". If anything students have become even more interested in learning in small groups, and more staff now see it as a demanding form of teaching where lack of skill can mean not merely that it is done badly but that it is not done at all - the students either don't turn up or it somehow transforms itself into a lecture. Not all students are enthusiastic: '*Classes are purgatory for staff and purgatory for us. They're boring because everyone just sits there – everyone else is silent so I feel it's incumbent on me to speak but I don't like to unless I'm sure of myself. I don't like to express half-formed ideas.*'

Usually when we come together in groups (as distinct from crowds or audiences for instance) we do so either to seek pleasure in other people's company eg in a pub, or because we *need* to join together in order to get something done or to produce something, using our varied skills. Learning in groups can prove to be productive and satisfying, but often also it can become highly threatening to the participants, and the resulting experience is both emotionally unsatisfying and unproductive. Where a group is really nothing more than a collection of individual learners, some learning may of course take place, but the expectation in small groups is that there will be a sense of belonging and enjoyment, and a sharing of ideas and experience. Thus if the individuals feel that they have not actually contributed something to the group, they are likely to feel a sense of frustration. But all this may appear rather idealistic, so we need to look at the reality behind the use of small groups in higher education.

Why Learn in Small Groups?

Some staff may feel that the emotional welfare of their students really hasn't got much to do with their small group teaching, the essential purpose of which they say is to make sure that students have really understood what they have been trying to get across in lectures. Careful questioning, they argue, can bring out the major misunderstandings and difficulties and many of these can be dealt with by the teacher in a way in which he can be sure that the students have really understood. Under the extreme pressures often felt by both students and staff to cover the ground effectively, such a view of the main purpose of group work is very understandable. But if this purpose is pursued vigorously and efficiently it may also mean that other purposes will not merely be ignored but will be actively discouraged. Strategies which may produce effective learning within the highly structured formal education system can leave students with little ability, or even desire, to cope with learning and relearning when they leave the formal supportive structures of higher education behind them. Nevertheless at work there will be structures of a different kind and many professionals now find themselves working in teams.

It could be said therefore that an important function of group work in higher education is to *enable students to know enough about themselves and about others to enable them to work independently and yet cooperatively within a team.* Such teams may or may not have formal leaders, but the style of leadership is likely to be very different from that of the more traditional seminar leader who controls the activity of the class in such a way that students learn to feel little responsibility for what happens in the group beyond doing required background reading.

The group experience can in fact be extremely important in achieving *freedom from dependency* if the students learn to play a variety of roles in the group and begin to develop a sense of responsibility for its success or failure. In the process of learning these roles they will need to develop more acute self-understanding, to become aware of their own inhibitions, defences and assumptions, and be able to recognise the difficulties which other students have and begin to help them to overcome them. In learning to become more sensitive to different points of view and ways of thinking and to work cooperatively with others using the varied skills of the group they may begin to develop a surer sense of

social identity, and a feeling of belonging and commitment. This can encourage not only enthusiasm in the subject but a willingness to reveal abilities which are so often effectively hidden even from themselves. Students' oral skills moreover, are unlikely to develop very highly simply in response to probing questions.

There needs to be a genuine sense of *opportunity for self expression* and this may be very difficult in a context where the main object is to increase understanding and correct misconceptions and faulty reasoning. Such a restricted conception might limit other important uses of small-group work such as enabling staff to understand more about how students respond generally to their educational experience. Most staff would agree that it is important for them to know why their students are taking their courses, and what sort of deeper satisfaction and disappointments they are experiencing. This will be very dependent on the quality of the personal relationships established with the students, but if the roles played by the students and staff in their group work are highly restricted it may be difficult for good personal relationships to develop.

Effective Group Discussion

This extended section puts forward some ideas about how we might improve our group teaching. We obviously emphasise questions of how to stimulate interaction and the relationships between staff and students during the group meeting itself, but we should perhaps first consider how far the success of group discussion will depend on decisions taken before the group even meets. These points will be taken up first.

Choice of Groups

One of the first tasks in group teaching is to divide students into appropriately sized groups. To a certain extent the desirable size of a group will depend upon the purpose of the discussion. For example, where it is hoped to encourage a wide variety of ideas in a brainstorming session (see later on page 55), a group of ten or twelve may be appropriate. For most purposes, however, the smaller the groups can be kept the better.

What then of the mix of students in each group? If the main purpose of the discussion is to solve a problem or to clarify

issues which have already been more formally learned, it may be a good idea to mix more quick thinking studens with those who are slower thinkers. In the process of discussion, the quicker thinkers may find themselves frequently explaining matters to the slower thinkers and thus understanding the topic better themselves; the slower thinkers on the other hand may be less embarrassed to learn in this way than from the tutor. However, in other cases it may be that to mix more extrovert students with introverts would be to allow the former to dominate the discussion. In such circumstances it may be better to put the extroverts into separate groups. (We are not attempting to equate quick thinking with extroversion!) Another problem in choosing the mix of students in groups is that sometimes a cliquish relationship between two or three students can make it difficult for other students in that group to communicate freely with them. On these occasions it may be appropriate for the tutor arbitrarily to split up the clique, giving its members the encouragement to develop new relationships.

Whatever the criteria for organising groups may be, consultation with other academic staff will almost certainly be valuable in achieving a more accurate assessment of students' personalities and abilities. However in order to evaluate recommendations from colleagues it is important to have clarified, at least to some extent, what the purpose of the discussion group is to be.

The Physical Conditions of the Discussion Group

The physical conditions of the discussion group affect the social relationships and roles pursued by members. When the differences in social level within a group are small, communication and hence the harmony and learning of the group are usually good. Part of the tutor's task therefore is to play down the differences in roles and in this respect the physical arrangement in a room may be of great importance. First, it is important to ask which room is to be used and what associations it will have in the minds of students. Is it the tutor's room? A classroom? A corner of the refectory? Is it a 'regular' room? Can a discussion overrun time if desired? Ownership, size, regularity, noise and interruption should all be considered.

Second, it is necessary to consider the disposition of chairs in a room. People do not communicate readily with the back of someone else's head. If it is to be a genuine discussion everyone should be able to see everyone else face to face. The chairs should

therefore be in a circle or as near a circle as possible (a 'C' or 'U').

A student's choice of position in a group may indicate the kind of relationship he or she wishes to have with the rest of the group and the tutor. Sometimes the person at the end of a semi-circle of chairs does not want to identify himself with the rest of the group; other students may choose a chair that they can push into a corner where they will not be noticed or have to take part.

Third, it is interesting to note the proximity of one person to another, especially the tutor's distance from other members of the group. The physical distance could be symbolic of social distance. This is particularly true if the tutor places himself in an erect armchair behind his desk in his own room, or is at the narrow end of a long rectangular table. Many of the physical conditions affecting discussion groups may sound trivial when made explicit; nevertheless they are often subtle and powerful influences in creating the atmosphere of the group.

Getting to Know Each Other

It is interesting to draw comparisons between groups which form for social reasons and those which are set up for educational purposes. In social encounters a great deal happens in the first few minutes of which we are often hardly aware. Much of this is in effect a mutual confirming that a relationship is being established. Comments about the weather, for instance, are not meant to be taken up in a critical or intellectual fashion. The weather is perhaps significant since it is the most obvious shared experience, but most people soon abandon it and try to find something more interesting which they have in common. Usually experiences which one person enjoyed and the other hated are avoided. Differences may well enrich the relationship once it has started, but generally there seems to be a need for an initial period of confirmation and agreement, during which exchanges take place at an informal and uncritical level.

In the same way, with student groups, some kind of initial shared experience can be immensely useful in launching group activity. The form of this shared experience might perhaps go beyond a discussion of the weather, and can even be organised in a fairly structured way. Films and video tapes, or short runs of them, for instance, have often been employed as a useful substitute, but it may be that with some subjects a more active form of shared experience would be a better starting point, such as a game

or simulation or even a visit, the shared experience of which will involve group interaction as well as the sharing of perceptions and ideas.

If students are to introduce themselves, then the question of first names and second names will arise. Some years ago quite a lot might have been communicated about the teaching relationship of a tutor who said that he would prefer it if everyone used first names; nowadays, the tutor who continually uses surnames might well create an impression of impersonality and unfriendliness. However, having said that, the use of first names still remains a matter of personal choice. Moreover it will not, of itself, ensure a personal and friendly atmosphere.

Encouraging Interaction

'*People ask questions and this stimulates the group. I feel we don't mind if a friend asks a question, but if a lecturer asks you, you dry up . . . A member of staff will always have the answer at his fingertips . . . I've always resented making an idiot of myself.*' Students who are talkative with their colleagues outside the seminar room are often strangely reluctant to contribute to group discussion where a tutor is present. In fact if ever the tutor has to absent himself from the group the students usually experience little difficulty in expressing themselves even on a designated academic topic. However, where a tutors' participation is essential, student interaction may be inhibited especially if he is concerned to *display his own knowledge*. There is a common tendency for tutors to set themselves up in a dominant position or otherwise to make themselves the centre of attention. It is often assumed by inexperienced tutors that they are not doing their job properly if they are not the centre of attention in discussion and students frequently have an expectation that tutors will behave in this way. Moreover, it is too easy to slip into a pattern of contributions alternating between tutor and student. Tutors usually need to adopt specific techniques for encouraging a less tutor-centred interaction. Here are some techniques that might be attempted.

1 Glance round the group while a student is speaking: this generally has the effect of reducing the anxiety of the speaker who is no longer fixed by the knowing eye. It also inclines the speaker himself to glance round and thus involve the attention of other people, thus discouraging the common tendency to step into a tutorial dialogue.

2 When a student asks a question turn it back to the student with 'well what do *you* think it is?' or 'has anyone else any views on this?' or similar rejoinders.

3 Avoid the temptation to reject or correct a student contribution (especially a first contribution) even if, in your opinion, it is inappropriate or demonstrates a misunderstanding. Rather you can invite the student to explain further (he may in fact have a valid point but not be putting it very well), to reconsider his comment: 'is that really so?' or you can ask the rest of the group for their opinion: 'what does anyone else think about that?' The important thing is not to inhibit the students' expression of opinion, although a dominating student may require a rather different approach. This is taken up later.

4 Avoid stating your own opinion too rigidly and thus find yourself having to defend it (although it is possible for a skilled tutor to make an outrageous statement as a means of provoking argument). Tolerant questioning eg 'would anyone like to explain . . .' and 'how did you come to that conclusion?' is more likely to generate discussion. Students often accept the opinions of their peers more readily than those of their tutors.

5 Call 'time out' at an appropriate juncture. This device is simply a break from the regular activity which allows the group to discuss what has happened in the discussion thus far and whether they wish to change the direction thereafter: in other words, to 'take stock'. It can help the group escape from a discussion which has become unproductive or avoid an interaction which is inhibiting its members from achieving an agreed task.

Academic teachers are usually selected for their ability to express themselves in writing. Consequently whilst generally good in generating words they are poor listeners. Teaching by discussion requires skills in observing and listening; lecturing provides the teacher with an opportunity to talk at length. All this said, many teachers may still be concerned to know how to work with 'dominant' and 'reticent' students. Often a student's inclination to contribute or remain silent will depend on the climate of the group as much as on his own personality. You may nevertheless find it necessary to use a convenient device to encourage fuller participation. For instance, giving a 'dominant' student a specific job such as summariser, or by using non-verbal signals. But neither

of these tactics can effectively replace the group's taking its own responsibility for effective interaction. The playback of a video recording of the group itself might facilitate this latter objective as might the sharing of tasks as indicated by Hill (1972). 'Reticent' students may be so only because they are not aggressive enough to risk cutting in on someone else's contribution. If the tutor therefore acquires the habit of looking round the group as the contribution is coming to an end he will frequently spot unconscious signals from other members indicating that they would like to say something. These may be an indrawn breath, a shift in the seating position or a glance at the tutor. The tutor may then give a signal, preferably nonverbal, to draw in the new contribution, by a hand gesture or an expectant look. 'Reticent' students may also be given jobs in the group in a similar way to those suggested for their more 'dominant' colleagues.

Asking Questions

Although we suggested at the beginning that asking questions should not dominate the tutor's activity there are times when, in order to dig deeper into issues, the tutor will find himself doing just this. If the object is to discover what a student or group of students thinks or knows, rather than just having expectations confirmed, there are some points to bear in mind.

1 Try to have some idea of the mental processes students are going through, and adjust your questions to the way they respond rather than thinking up good questions beforehand as though the quality of a question was independent of the time, place and person involved.

2 Try to avoid questions which suggest one answer is expected more than another eg 'do you think Wordsworth had a great influence on Coleridge?' Rather ask: 'what sort of relationship do you see between the works of Wordsworth and Coleridge?'

3 Try to avoid playing the game which is an elaboration of 2 in which the tutor virtually invites students to guess what is in his mind, and in a manner reminiscent of the children's party game 'Hunt the Thimble'. Children usually enjoy this game, and in the tutorial situation it is significant that students often begin to feel childish as each of their cautious responses is in turn rejected until the 'correct' answer is approached. If the tutor does want

students to arrive at a predetermined answer or has his own favourite solution it is probably better for him to draw out a range of possible answers from students and then encourage discussion of their merits. This often produces ideas which the tutor has not thought of. He may then reveal his own list for comparison.

4 Try to ask questions which give informative answers. Avoid verbal checklists: 'Did you calculate the mean?'; 'Did you subtract the mean from each reading?' Rather ask: 'Tell me exactly what you did' followed by 'what about . . . ?', 'what else?', 'uh-huh?'.

5 Ask questions which elicit responses at the higher end of Bloom's Taxonomy eg 'could you put those ideas together for us?', 'how does that theory compare with the other?', 'how important do you think this scheme is?', 'how do you feel about it?' or 'would you use this argument in the outside world?'

6 Be very cautious about showing approval and disapproval in evaluating answers. Sometimes it may help a reticent student to have his one and only contribution approved. but disapproval is likely to change what a student is willing to say. An honest attempt to contribute should be welcomed. If the tutor feels a comment is irrelevant to the discussion (remember it may not be irrelevant to the student concerned or to the other students) he may respond with 'that's very interesting – could we come back to it later once we have settled the issue of . . .'. It is important to recognise that the apparent irrelevance of a comment may be an indication of the student's feeling out of his depth or of his having waited so long to speak that his contribution has become out of date.

7 Once you have asked a question be prepared to wait for an answer. Short silences are not necessarily a bad thing – they often get students talking more freely in the long run once they know you require (and appreciate) an honest answer to an honest question. If every question is greeted with silence then it might be of value to discuss with the group why this may be so.

8 Sometimes it can be useful to encourage individual thought about a question by asking students to write some brief notes which might then be compared with a neighbour's. As well as allowing students to stand back from the discussion for a while it can encourage participation by quieter members. Notes may

sometimes be transferred to a board or overhead projector so that they may be shared more easily.

9 Remember you can often ask questions with little more than the raising of one eyebrow (if you can do it!). Facial expressions are frequently a more direct and less threatening means of querying someone's contribution.

Following the Discussion

To some extent the activity of the tutor in relation to the discussion will depend on the role he decides to adopt (see next section). The traditional job is that of initiating the discussion, linking what different people say, summarising, theorising, setting new directions and so on. There are certain guidelines which may be of help for these purposes.

It may be a good idea to help the group to decide what the problem or task is. This may not be evident immediately but may emerge as the discussion progresses. Sometimes the problem is predetermined from prior reading but the tutor should always be alert and amenable to the student's perception of the problem. Answers to the problem may consist of 'pros' and 'cons' and it is sometimes useful to list these, or ask the students to do so, under separate columns in order to sort them out. When a confusion arises it is probably more beneficial to students to allow the discussion to continue until (hopefully) the point is unravelled by them, when the tutor can remind them of what has happened. In order to link what different people say it may be valuable to find a device for allocating ideas to people and indicating inter-relationships between them. One can draw a chart to match the arrangement of chairs thereby allowing each contributor to be labelled with a letter of the alphabet. However, the tutor will almost always experience a problem in deciding when he should intervene in the discussion. It is probably always safer to err on the side of apparent procrastination rather than punctuality as a policy for intervention. Very often tutors pick up cues from students indicating when the group is capable of handling the problem and when it patently needs his help. But it is usually wise to let the group itself spot the difficulties in the first instance. The manner of any intervention is also important and should be calculated to draw out ideas rather than to impart them.

Another way to tackle the tasks of the tutor is to ask students to

undertake them. Successfully achieved this can allow the tutor to sit back and observe the process of the discussion to a greater extent and to know when it might be appropriate to restructure the group, for instance by splitting into smaller groups or suggesting a change in the ground rules (see next section). Although discussions do not require the same sort of preparation as lectures one cannot predict the directions of the argument and considerable planning is necessary. It is usually wise to try to imagine what possible difficulties are likely to arise and devise beforehand some strategies for dealing with them even if they do not prove to be necessary.

Role of the Tutor

'Of a good leader, when his task is finished, his goal achieved, they say, "We did this ourselves".' (Lao-tse ca. 600 BC)

The role which the tutor adopts may be of considerable significance in determining the freedom of expression and the style of learning in the group. Paradoxically, one of the most effective ways of diminishing his influence as an 'authority' is for the tutor to be initially autocratic in structuring the group activity, and then to adopt a listening role either with the whole group or with sub-groups. This will usually avoid confusion with students about their authority/dependency relationship with tutors. There is no need to *sound* autocratic of course – 'Perhaps you would like to . . .' or 'What I'd like you to do . . .' will suffice. Lest tutors should feel this is unnecessarily manipulative there is no reason why the tutor should not discuss his intentions and purposes openly with the students before embarking on organising the group. Various types of group activity in which the role of the tutor may be of this nature will be described in the next section.

Once the discussion is under way there are several roles a tutor can play. The traditional one is that of *leader* or *instructor* where typically the tutor may initiate proceedings with a short statement or summary and then try to draw out students' thoughts, periodically linking them together, and redirecting the content of the discussion as appropriate. There is a great danger with this role that students become too dependent on the tutor and feel constrained by *his* frames of reference. A very different role for the tutor to adopt is that of *facilitator* where, using techniques like those described under 'Encouraging Interaction' and 'Asking Questions', he generates self expression and interaction in the group.

The facilitating tutor, though usually non-directive, may have to direct or structure proceedings from time to time in order to achieve these ends. The Nuffield Group (1974) suggest four other roles: *devil's advocate* in which the tutor challenges student contributions and frequently shifts his ground (this requires an open acceptance of the tutor's role as a sort of court jester and is likely to work best with mature and self-assured students); *neutral chairman* who controls the procedures but does not contribute to the substantive content; *consultant*, where the tutor is an unobtrusive expert who is called upon from time to time when help or information is needed; and *counsellor* in groups where the social or emotional needs of the students are of concern.

Other roles may include *observer* or *commentator* where the tutor sits outside the perimeter of the group and comments from time to time on the group interaction or on the modes of arguments used by group members; the *wand'ring minstrel* when a larger group is split up into smaller groups in the same location and the tutor circulates, dropping into each group in turn to listen and if necessary probe; and the *absent friend* where the tutor leaves the group or groups temporarily to their own devices consequently removing the influence of his authority. The choice of role for the tutor may be dictated not only by the objectives of the group but also to some extent by the nature of the subject matter and the physical and social ambience of the group (for instance, its size, physical conditions, and level of personal relationships in the group).

Many tutors believe that it is important for the tutor to clarify what his role is to be at the beginning of a group session, except possibly where the object is to study the reaction of students to the tutor's position. However, even when the tutor's role has been discussed and clarified there is frequently a residual expectation among group members that the tutor will occupy the traditional role of leader. It may be a good idea to discuss with students why this is so. Elizabeth Richardson (1967) describes the resounding silence that frequently follows her denial of a position of authority in a student group when she instructs the students to decide for themselves the form and content of the discussion. She argues that it is important to discuss this reaction as a means of achieving a better understanding of relationships in the group.

Perhaps what may ultimately be of more significance in determining group interaction are the *ground rules* of discussion which

frequently lie unexamined and ambiguous. Indeed many of the problems that students have in freely expressing themselves in small group discussion may stem from their uncertainty of what the 'rules of the game' are, or from their feeling restricted by assumed rules. For instance, it is frequently assumed by students that you should leave it to the tutor to indicate, redirect and summarise the discussion; that it is the tutor's job to determine the objectives and procedures; that one should not express one's feelings openly; that one should not interrupt anyone making a presentation; that a period of silent reading in the whole group is inappropriate, and so on. It is sometimes a valuable device therefore to formulate explicit ground rules which though they may appear constraining can often generate a greater air of freedom in the discussion. Such rules may be no more than a change in the above implicit rules, but others could be more formal, eg no one speaks a second time until everyone else has spoken once; the tutor only speaks in answer to direct questions; the group has to take responsibility for its own process; 'time out' may be called at any time. Obviously the more rules of this kind are introduced the nearer one approaches a game. It is also possible to introduce a 'meta-rule' that any individual may change the rules at any stage with the approval of the majority. We are not suggesting here that the group should have a constant preoccupation with rules but that occasionally it may be helpful to examine what rules exist and to experiment with one or two changes in order to find out whether the interaction improves. These *rules* will frequently determine the *role* of the tutor and vice-versa.

It would be a mistake to suppose that a tutor will always know which role or rules should be adopted before a discussion session starts, or that he cannot switch from one to another as the interaction progresses. The fact that the categories and boundaries surrounding group discussion are blurred and intangible is a source of both anxious concern and eternal fascination to the thoughtful tutor.

Varieties of Small Group Teaching

The nature of a small group discussion will depend upon a host of factors, for example, how it relates to the other learning activities in the course, at what juncture in the course it occurs, how the

tutor perceives its function and his role in it, what the students' expectations and needs are and so on. For instance, soon after the start of an academic session it might be very appropriate to discuss students' learning problems in the group whereas it might not meet students' needs to do so at a time when they are choosing assignment topics or the purpose of the group is determined by other extrinsic goals. Again the purpose and therefore the activity of the group may change its nature as the discussion period progresses. The tutor might wish to start with a case history and continue with a free discussion or in order to achieve full participation to organise 'snowball' (or 'progressive doubling') groups in which the groups move through successive phases of sharing ideas (see page 55).

The following list of types of small group teaching is by no means exhaustive. There is considerable overlap between many of them and it is quite feasible to use more than one of them within a single timetabled period. They are grouped into three general categories:

1 those concerned with mainly cognitive objectives (understanding, clear thinking, logical argument, problem solving, analysing, evaluating);

2 those involving creative objectives (perceiving new relationships, producing imaginative solutions);

3 those developing individual and group self awareness, or communication objectives.

Within each of these categories an attempt has been made to progress from *tutor control* to *student freedom*. Some of the types have titles eg 'brainstorming' which prescribe the activity in the group; others eg 'syndicates' may prescribe the tutor's role; others eg 'seminar' are generic titles for a timetabled discussion group; and yet others eg 'buzz groups' describe activities which could take place within many of the other ones or even in a lecture session. Nothing, in other words, is as simple as it seems and there is considerable overlap between categories. Many of them imply differences in the structure of the ground rules.

Controlled discussion: teaching in which students may raise questions or comment, but the general direction is under the strict control of the teacher. This is normally used after a presentation method such as a lecture with a class, rather than a small group.

Step-by-step discussion: teaching by a carefully prepared sequence of issues and questions to draw out the required information from students. The input may be a sheet of notes shared by teacher and students or a sound or video tape. It has the possibility of embracing the function of lecture and follow-up seminar in one class period.

Seminar: generally but not necessarily a group discussion introduced by the presentation of an essay of other work. A seminar is also used to describe a group discussion following a lead lecture. It may be considered as 'subject-centred' compared with the tutorial. The word 'seminar' is often used as a convenient title for any group discussion which may in fact include many of the process activities outlined below.

Case discussion: similar to problem-centred groups (see below) but the form is usually a case history and discussion is more discursive. Group members present brief prepared cases or problems and the teacher draws out issues and possible solutions from the group adding from his own expertise only when he is sure that this is needed to cover the important aspects of the subject. The cases or problems are meant to introduce a specific topic in a way which can make it more relevant to felt needs and interest. Case discussions are more common in social and medical science but they are also used in physical science to study a scientific discovery or to examine a design failure in engineering.

Individual tutorial: a period of teaching devoted to a single student. The purpose is usually the critical discussion of a specific problem or essay submitted by a student. It may also involve discussion of personal or study problems and the monitoring of the student's work.

Group tutorial: the topic and general direction is given by the tutor, but the organisation (or lack of it), content and direction of the discussion depends on the student group. It can therefore be described as 'student-centred' although it may prove difficult for the tutor not to dominate proceedings, when the number of students is greater than about eight.

Free group discussion: a learning situation in which the topic and direction are controlled by the student group; the teacher observes, although he may occasionally comment on the process.

Problem-centred groups: groups of four to twelve members, often formed from larger groups, to discuss a specific task and work towards its completion or solution. The time is generally limited to one session. Given moveable room furniture, lecture classes can be organised into problem-centred groups, alternating group discussion with formal inputs to the whole class (Bligh, 1972 p 193).

Cross-over groups: the class is organised into groups such that the number in each group is the square root of the total number participating (hence the alternative name 'square root' groups). Remaining students may be designated as observers. The activity consists of a short period of discussion in groups following which one person from each group transfers to another group according to a prescribed pattern of exchange. This person carries information to his new group who in turn brief him. This procedure is repeated until only one person remains in this original group. Cross-over groups can facilitate a rapid exchange of ideas as well as being a useful social ice-breaker.

Buzz groups: groups of two to six members who discuss issues or problems for a short period, or periods, during a lecture or similar situation. This technique can be used in a 'snowball' form starting with individuals writing down points, ten forming pairs to share thoughts, which then merge into small groups, which finally report back in a plenary session (Northedge, 1975). It is sometimes used in the lecture situation as a means of achieving participation and feedback.

Syndicate method: teaching where the class is divided into groups (of about six members) who work concurrently outside formal class situations on the same or related problems with intermittent teacher contact and who write a joint report for the critical appraisal of the whole class. It may continue over several weeks or months (Collier, 1969).

Self help groups: these were instituted by the Open University to cater for the need of students working from correspondence texts to share ideas and help each other. Provided there is a binding goal for the group they can be very valuable. With full time students such groups often occur naturally, but more formal encouragement may be necessary.

Brain-storming: a period in which members of a group offer spontaneous suggestions in an intensive manner as solutions to

a problem which are received *uncritically* and listed. This is usually followed by a period in which the group evaluates each of the listed solutions and modifies them to meet the real problem. Four catch phrases which are commonly used to remind participants of the essential features of brain-storming are: cross-fertilise, suspend judgement, freewheel, and quantity not quality. See Osborn (1953).

Synectics: a development of brain-storming in which special techniques, such as choosing group members from diverse backgrounds (eg philosophy, chemistry, engineering), are used to produce a creative solution to the problem. Synectics frequently involves the use of devices like making the familiar strange and the strange familiar, as well as using fantasy to extend the creative imagination. It has possibilities for inter-disciplinary study. See Jordan (1961).

Associative discussion: a style of free group discussion where students are encouraged to draw relationships between their experience in the group and similar experiences outside, eg when trainee teachers in a student group describe their feelings about the control exerted by their tutor in that group and then switch to relate these to the situation where they are teachers. See Abercrombie (1974).

Simulation and gaming exercises: a more structured activity than role play in which interaction occurs within a set of prescribed rules. Both these exercises and role-play can be used to develop freer relationships and a more cohesive spirit within a group. See Chapter 4.

Role play: generally used to describe a simulated activity in which participants try themselves out in different roles in interactive situations; it can also refer to the delegation of specific responsibilities within the group such as chairman, presenter, summariser, timekeeper (see Hill, 1972), a technique sometimes advocated for tutorless groups.

Fishbowl: a number of the class sit in an inner circle and hold a discussion while the remaining members sit round the outside and observe the interaction. A general discussion follows in which views on the previous interaction are exchanged between the two groups; roles may then be reversed for a further fishbowl session.

T-group method: a method of teaching self-awareness and

interpersonal relations based on therapeutic group techniques in which individual group members discuss their relationships with each other. See Smith (1970).

The organisation of several of the above group techniques within a structured sequence of teaching methods is described by Bligh et al (1975).

Evaluation of Group Work

The evaluation of small group teaching is discussed briefly in Chapter 10 where it is suggested that developing students' sensitivity in the way groups work is important not just in preparing them to work more effectively in teams and on committees in later life. If the group itself is to learn to be a group instead of a collection of individual learners; and if the students are to develop a sense of responsibility for each other and for the quality of the work they do together, then they must spend time in looking at their own activities within the group. Some suggestions are given about ways of doing this but there are two other issues which need to be considered; one is the assessment of individual students in relation to groups which is mentioned in Chapter 7 and the other is the general question of the value of group work in terms of our broader educational aims. Unfortunately evidence based on our traditional formal ways of assessing students suggests that learning in small groups is much the same as learning in other ways. However, Walton (1968) found that although large lecture-demonstration classes in psychiatry were just as effective in teaching 'facts' and clinical skills as measured by examinations, students taught in small groups had more favourable attitudes towards psychiatry, judged their training as superior, felt more confident and were more interested in psychiatric patients. Abercrombie (1974) found that intellectual changes associated with group work were not commonly measured. These changes were to do with distinguishing between facts and inferences explicitly, considering alternative hypotheses more frequently, and generally being more flexible. If we want to have a clearer idea of the value of our teaching in small groups it seems we need to develop more sensitive ways of measuring the more intellectual aspects and include some assessment of changes in attitudes.

A Checklist for Observation of Discussion

Objectives

1 What was the purpose of the discussion? Was it clear to the participants? Did they accept it?
2 Is the teaching method appropriate for these objectives?

Setting

1 The room itself – what associations does it have? Does it encourage intimacy and relaxation?
2 Seating – are the chairs comfortable? All the same? Draw a plan of their arrangement. Note empty chairs, distances between participants, prominence of any one group member including the teacher.

Role of the tutor

1 What role was adopted? Facilitator, chairman, instructor etc. (See explanatory notes discussed in the section on 'role of tutor'.)
2 Was it clear, accepted, appropriate?
3 What kind of questions were asked – open, factual, personal reactions, critical, appropriate to the level of the students, loaded . . .?
4 What proportion of the time did the teacher talk?
5 What techniques were used to involve group members? What use was made of praise and encouragement?
6 Were students discouraged from participating – how and why was this done?

Roles of individual students

1 What interpretations (if any) can be made about individual students' characteristic behaviour? What observable effects do they have on relations within the group (including the tutor)?
2 What role does each student have (eg leader, playboy, passive observer, clarifier, consensus-taker, reconciler, etc)? Are these roles temporary, changing, or permanent? Are they sought, accepted, or thrust upon them?

Dynamics

1 Length and frequency of each member's contributions.
2 What status does each group member have? (nb: the teacher is a group member).
3 Is the group harmonious or competitive? How were conflicts dealt with? Denial, avoidance, repression, or made explicit and worked through?
4 What emotions or motives are aroused? (eg do questions pro-

duce fear, curiosity, laughter . . . ?) What are the goals of group members? Do they coincide with the teacher's objectives? How much commitment?
5 Did the group stay formally as one group or did it split up for different phases? What effects were produced by the changes or lack of change?
6 What rules appeared to govern the discussion? What behaviour was expected in the group, eg order of speaking, not disagreeing with tutor, avoiding specifics?

Summary

Learning in small groups is a traditional and essential part of the experience of higher education whether it occurs in the tutorial, the seminar, the laboratory or as part of a project. Their aims or purposes will depend upon a number of factors which go beyond the more traditional concern for cognitive understanding and include *developing oral skills, providing opportunities for self-expression, giving staff feedback on how students respond to ideas, developing self awareness and the ability to work independently yet cooperatively in a team, developing a sense of social identity, and a feeling of belonging and commitment.* Using, in other words, the forces of social relations to generate the desire to learn.

What students get out of group work will depend very much on what they are prepared to put in, but it is partly the tutor's job to create a suitable social ambience. This may involve decisions about the size and mix of groups and the way chairs are arranged; allowing for an initial period in which relationships are re-established; asking questions which open people up rather than closing them up; glancing round the group when a contribution is being made and otherwise avoiding the danger of becoming the centre of attention; asking the group to 'take stock' of its own activity.

There is a variety of roles open to the tutor depending on the type of group activity: instructor, leader, facilitator, devil's advocate, neutral chairman, consultant, counsellor. Sometimes the tutor may absent himself for a while or split the class into smaller groups and move from one to the other probing and sowing ideas. There are also implicit or ground rules which often determine behaviour in a group. These can be changed sometimes with consequent improvement in the interaction.

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Various styles of group discussion have been listed and these embody different degrees of tutor control, different ground rules and different educational objectives (cognitive, creative, and affective). Learning in small groups appears to be no more effective, when measured by traditional assessment procedures, than learning in lectures. However, research evidence indicates that they are important in developing more favourable attitudes towards, and greater confidence in, the subject, and intellectual flexibility. A checklist for observing discussion is appended to assist the process of evaluation and improvement of group techniques.

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More Independent Methods: I

Although virtually all teaching situations in higher education are, to some extent designed and controlled by teachers, the various approaches and methods described in the next two papers are characterised by a comparative increase in the autonomy of the student in terms of his ability to pace his learning, to follow his own learning inclinations (within limits which may be prescribed by the teacher, the student, or both jointly), to discover and apply concepts, principles, and laws through his own activities and efforts, or together with his peer group. In contrast with conventional lecture and seminar methods, the physical presence of the lecturer may not be required at all (an important consideration in a situation of deteriorating staff/student ratios), or, if it is, may well involve him in a tutorial or counselling role rather than a didactic one; responding flexibly to needs and problems as they arise rather than making formal and authoritative inputs. For this reason, and because of the careful preprogramming and preparation that is often required, these methods tend to be *more* demanding and challenging for teachers than conventional techniques.

Simulations, Games and Role Plays

Much thought has been applied in trying to determine the boundaries between these kinds of activities. In point of fact, it is very difficult to draw clear distinctions in many cases. Simulations perhaps have a broader, and more inclusive, connotation than games, and might well involve the use of a computer. But both attempt to model some kind of reality in which the student *works through* a problem or activity rather than simply discussing it. Role playing is often used in simulations and games, but as a separate activity generally focuses on interpersonal and behavioural learning.

More important than their differentiating characteristics are their

shared features. All three methods involve the student in a more active role by comparison with traditional teaching methods. They all tend to involve the prestructuring of some conflict situation to which the student must respond either as an individual or as part of a group. In all three, the student has to choose between various possible courses of action and to a greater or lesser degree has some control over events. Some sort of final decision is often required. Usually all three methods allow for rapid feedback to individuals or groups about the consequences of their actions, attitudes, or decisions. For these reasons we shall consider these methods under a single heading. A considerable number of simulations and games have now been developed for a variety of purposes and in a variety of subject matter areas. In principle, almost any teacher should be able to find a use for them, but so far they have mainly been taken up in the fields of social studies, history, geography, economics and business studies, politics and government, and urban and community studies. Further information about available materials can be found in Taylor and Walford (1972), the BBC Publication on Games and Simulations, Gibbs (1974), and Zuckerman and Horn (1973) (mainly American).

What are the advantages of these methods?

A number of arguments have been advanced in favour of the use of these methods. Traditional teaching in higher education tends to stress cognitive or intellectual learning. The typical lecture or seminar will emphasise facts, concepts, principles, hypotheses, etc and the application of analytical thinking. For some teachers this seems perfectly normal, and indeed the purpose of higher education. Nevertheless, there are undoubtedly many other possible learning objectives which might be pursued in the classroom, eg self development, acquisition of skills, self awareness, personal independence, improved social sensitivity and so on. If one has these kinds of objectives – attitudinal, behavioural, value-oriented – orthodox methods are less helpful. They tend to be too passive and detached. On the other hand a simulation or game can be especially useful for these purposes.

For instance, the student has much greater *control* over the learning situation, and this helps to undermine his dependence on teacher authority. Other participants in a game, or the structure of the game itself, may well provide him with evaluation data about his performance, behaviour or attitudes, thereby minimising

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his reliance on teacher evaluation and helping to develop habits and expectations of personal responsibility for learning. He has much greater opportunity to exercise and practise physical, social or other kinds of skills. He is much more likely to learn about certain types of processes, particularly decision making processes. As increasingly greater emphasis is being laid on these types of learning objectives, so simulation type methods assume a greater importance.

Simulation can also help with the problem of applying classroom learning to real life situations. The closer learning approximates to the conditions in which the learning is to be applied, the more likely it is that the learning will be transferred. In sophisticated pilot training simulators this principle is developed to its ultimate extent, but even at the level of, for example, simulating a selection interview it is clear that learning by this method is likely to be much more successfully transferred than, for instance, by reading a book on the subject.

Most students appear to derive great enjoyment from participation in these teaching methods though there are individual differences in this. Some may be initially apprehensive, a few will continue to be apathetic, a small number may be disoriented and hostile. However, a variability of response will be found with any method, and the overall mood of a class engaged in a simulation type exercise is one of interested involvement and high activity. This is some indication of the enhanced motivational properties of the method.

A criticism sometimes raised about simulations is that although they attempt to model reality, they in fact fail to do so, and to the extent that they fail so to do they are misleading and wasteful of time and effort. One can readily admit that a real life situation, geared to the needs of the student, can provide an excellent learning environment in many circumstances. What can be lost sight of are the positive benefits of using simulations instead of real life conditions for many teaching purposes. For instance, in simulations one can effectively control time in that processes can be speeded up or slowed down; operations that might take days or months in real life can be simulated in minutes or hours. An obvious example would be the cycle of business decision making that takes place in the typical management game. Further, one can manipulate the variables in a simulation in a way that would be impossible in real life, thereby enabling participants to experiment with alterna-

tive ways of dealing with a given problem situation, or to practise responses. There can also be cost benefits associated with simulations; crashed aeroplanes and bankrupt firms involve unacceptably high costs; mistakes made in aircraft simulators and business games are comparatively cheap (even though the development of these learning resources may at first sight seem 'expensive').

What are the disadvantages?
These methods certainly do seem to be 'resourse-intensive'. Off the peg games or simulations can be expensive, and the development of one's own materials will probably demand considerable time and effort, often involving field testing and validation. Generally speaking the traditional classroom is not well suited for simulations and games; conventional seating arrangements often need to be disrupted; more space per student is generally required, perhaps involving a number of separate rooms; and special accommodation may be needed, for instance, if films or video recording are involved. Further, in general, class sizes cannot be too large and staff members will often need to be more highly trained and skilful than average. This is not to say that these kinds of problems cannot be overcome to some extent by enthusiastic, skilful, and adaptable teachers, but the disappointing failures that some teachers encounter with simulation methods can often be attributed to these kinds of factors.

Conclusion
Simulation methods are a very promising development. They are not a panacea; they are not without costs. They are not being advocated as the best methods of teaching, but they are certainly good ones, and constitute a very useful addition to the teacher's repertoire. Methods that can enhance motivation and involvement, assist in developing class and individual autonomy, and highlight the relevance of learning must receive serious attention.

Programmed Learning

Programmed learning refers to a technique which is typically characterised by self-paced learning, requiring active participation by the learner, and involving immediate feedback regarding the correctness of response. The programmed material can be presented

in a variety of ways, by texts or teaching machines, or even linked to a computer. Regardless of the medium of presentation, however, the heart of programmed learning lies in the programme itself, ie the sequencing and organisation of the units of information and instruction leading to the required terminal behaviour or performance.

Programmed learning, in essence, is not new. As early as the mid 1920s, Pressey had invented a device which enabled students to score their own objective tests. Pressey claimed that apart from labour saving, the device actually enhanced learning, firstly because correct responses were immediately confirmed as being correct, and secondly, by identifying precisely those areas requiring further study. This work, however, was largely forgotten till the mid 1950s, when the pioneering efforts of B F Skinner and N A Crowder launched the programmed learning movement as we know it today.

The early programmes tended to be of two broad types: 'linear', in which the learner proceeded in sequence through the programme, each step being very small and calculated to produce a very high proportion of correct responses, and 'branched' (or 'intrinsic') which permitted incorrect responses to multiple choice questions, and provided remedial material as appropriate. At the present time, while examples of these types are still available, the distinction between them has become blurred, and frequently learning 'packages' will be encountered incorporating features of both types of programme. By now, considerable research has been conducted to compare the relative effectiveness of programmed learning with other methods. Generalisations are difficult to make because of the great variety in subject matter, level and type of student, and so on, but it does seem that programmed learning is as effective as conventional methods on immediate tests, and usually faster. Whether programmed learning methods encourage superior long term retention of material learned is still an open question. What superiority has so far been discovered in the method may well be largely accounted for by the careful attention to objectives and sequencing of information, a point which should encourage the teacher to give great thought to these factors whatever intructional mode he chooses. Further it seems fairly clear that the facility for self-pacing is likely to make programmed learning more efficient than a pace prescribed by the teacher and presumably pitched at the average level. This benefit however would be more than offset if programmed learning were to form a major

part of the total teaching, since the instructional mode would become highly individualised to the detriment of the stimulating effects of classroom interaction.

Other criticisms that can be levelled against programmed learning in the higher education context relate to the costliness in time and money of developing and pretesting of programmes. This factor may well account for the paucity of programmed learning material available in higher education – an important constraint for the lecturer. Further, it is argued with some justice that programmes do not encourage and cannot cope with original responses – surely a severe drawback at degree level. In any case, there is some evidence to suggest that students find the highly structured nature of programmed learning inflexible and uncongenial, and tend to prefer conventional texts. For all these reasons, it is clear that programmed learning is not the panacea it was once thought to be. There may be a role for it in conjunction with other methods, especially if staff resources are inadequate, or if some individualised remedial teaching is required, but at present what potential it does have cannot be realised until more programmes are available for degree work. (Cavanagh and Jones, 1969, have compiled a useful list of programmes in print.)

Reading

With the conflicting claims which assail us from all quarters for every latest innovation, the well established merits of reading and individual study can get overlooked. Despite problems about rapid obsolescence, ill thought out construction, and so on, books and journals remain the primary learning resource for most purposes. So it is particularly unfortunate that teachers tend not to help students sufficiently, and in the right ways, in order for them to make the best use of this resource. For many students independent study in the traditional manner, making intelligent use of libraries stimulated and assisted by a lecturer's example and advice, can be one of the most fruitful forms of learning. In a useful survey at Sheffield University, however, Mann (1973) concluded "that undergraduates are, on the whole, uninstructed about the use of books" and also "that lecturers could do a lot more than they do . . . to improve the situation". Students need advice on what to read, what are the relative priorities, what books should be

bought, and both college libraries and local book shops need to be advised about the teacher's recommendations.

A booklist should be prepared for each course which indicates the essential basic reading to be undertaken by everyone and which enables the students to select books for those subjects they wish to study in depth. In other words, it is not sufficient simply to produce a massive, forbidding and unannotated bibliography. This will simply threaten and confuse the student, raise his anxiety, and quite possibly put him off reading altogether. It is far better if the list is broken down into separate sections as follows:

1 One or two introductions
2 One or two basic texts for the course (if they exist)
3 Further and more advanced reading (books or papers) perhaps broken down by topic to aid clarity and selection,
4 Important primary and original sources
5 Essential reference works, and
6 Any other miscellaneous publications you think are worth mentioning.

Full information regarding title, author, publisher, date and place of publication, volume and page numbers (where relevant) etc should be given, perhaps noting those publications that are available in the library. Attention to these kinds of details can be immensely helpful to students and librarians alike. Carelessness in these matters leads to time wasting and inefficiency. It is desirable too for the lecturer, either in the booklist itself or in one of his class sessions, to give more detailed comment on the references, indicating their strengths, weaknesses, special features etc as necessary. This will further help the student to pursue his reading intelligently. Lecturers should always remember too to let the local bookshops have a copy of booklists, indicating which titles are recommended for purchase, which are essential reading, how many copies are likely to be bought and so on. Similarly, college libraries should have a copy of the list to ensure that titles are stocked, and they should also be informed which titles are likely to be in heavy demand, in order that multiple copies can be made available, or titles put on short term loan, or earmarked for reference only. If this liaison is not established with bookshops and libraries several months ahead of the beginning of a course, the result will be turmoil and confusion, and a great deal of the lecturer's time

may be wasted dealing with a spate of (entirely justified) student complaints.

Guided Study

Some lecturers have found it useful, both in reducing their own lecture load and in encouraging independent study habits, to develop their annotated booklists into a programme of assignments in which learning requirements and a date for completion are clearly specified, and precise references (perhaps chapters, papers, and handouts, rather than whole texts) and other sources of information are spelt out. Assignments can be of variable duration (a week, a month). The materials might be given in the form of a study pack, or the student may need to seek references for himself (in the latter case there may be difficulties if the library is not well stocked with multiple copies of the relevant materials). Often the lecturer produces notes on points of difficulty or confusion and sets some practical or written work to be completed by a target date. The lecturer's classroom role is one of briefly reviewing the material to be covered, to expand upon and develop the subject, and to encourage group discussion. This approach can often, if desired, be conducted on a group rather than individual basis. A good example is given by Collier (1968), who reports considerable gains in student involvement and achievement, resulting from his 'Syndicate Method'.

A more self paced form of guided study is the so-called 'personalised system of instruction' (PSI) where work is broken down into specially prepared modules, or assignments based on existing published material. The tutor devises a variety of tests to assess 'mastery' of the material which are taken by the student as and when he feels ready for them, and which are marked immediately by the tutor in the presence of the student. A specific example of PSI is the Keller Plan, a type of independent learning originally developed by F S Keller, Professor of Psychology at Columbia University. Students work largely on their own and at their own pace, from units of written materials, each unit representing about one week's work. The aims of each unit are set out as clearly as possible, together with suggested ways of achieving them. Students may for instance be advised to read specified pages of a text book, together with specially prepared discussion notes, and

then to work on certain practice questions. They are encouraged to co-operate and to help each other with problems. When the student feels that he has mastered a given unit he presents himself for a short test which he must pass before going on to the next unit. After the test (which carries no penalties for failure other than the need to resit) the student discusses with his tutor any problems that have arisen either in working through the unit or tackling the test itself. Although lectures are not used as the main teaching vehicle, some may be provided to give an introductory overview to illuminate certain aspects of the course. Tentative findings on the Keller Plan approach as a whole are that self-pacing by students is a crucial feature, and should be preserved in spite of the problems of time distribution; that the abler students gain more from the approach than the less able though overall performance is usually improved; and that students themselves feel that they work harder, use their time to better advantage, and have closer contact with academic staff than before. Hendrick (1975) compared student grades on Keller Plan course with grades obtained from conventional lecture methods and found no significant difference in the amount of material retained, but much higher morale, both of students and staff, when using the Keller Plan.

It may be argued that directed reading and guided study programmes are too prescriptive and do not allow the student the choice and breadth of reading he is entitled to expect at degree level. Against this, it is important that students should not be overloaded by the assignments, which should be realistic and attainable without extreme effort. Guided study programmes should not fill every moment of a student's day, and care should be taken to ensure there is adequate time for other pursuits, both academic and non-academic. Guided study is a promising development which more lecturers might consider attempting than currently do. Results and reactions seem to be satisfactory, and the approach is flexible and adaptable, and within the means and competence of lecturers working individually.

Peer Teaching

By peer teaching is meant a variety of practices involving the use of students to teach and help other students of approximately the same age and educational experience. This could be by means

of discussion groups led by fellow undergraudates, autonomous study groups using teachers as consultants, second or third year students acting as counsellors to first years, students acting as tutors in the PSI approach (see above), and so on. Peer teaching methods have the advantages of encouraging active involvement in the learning process ('teaching is the best method of learning'), of facilitating social relations between students and developing social skills, and improving the efficiency of teaching (more teaching for the same number of teachers).

Marcel Goldschmid in a paper to the Lancaster University Conference on Higher Education, 1975, talks of the high desirability of extending the peer teaching approach both for instructional and social reasons. "It can present an element of individualised instruction (eg proctors in PSI) or a supplement to a more traditional approach (eg lecture). Research has shown that both student 'teacher' and student 'learner' benefit from peer teaching both cognitively and affectively, especially if students alternate between the two roles. Since it is economical, one could easily imagine a campus where all students are learners *and* teachers at different times and in different subjects, thus facilitating social interactions and enhancing learning." For further information and a thorough review of peer teaching methods, see Goldschmid and Goldschmid (1976).

Summary

A number of teaching methods increase the student's active involvement in the control, choice, and pacing of learning. Nevertheless teachers may find some of these methods more demanding than conventional ones because of the requirement for greater preparation, a wider range of teaching skills, and more flexible behaviour.

Simulations, games and role plays have already been used in many subjects, and in principle could find a place in any teacher's repertoire. They tend to foster active, motivated, and independent learning and are especially useful when course objectives specify attitude or behaviour change, the transfer of learning, the understanding of processes, and an experimental attitude. They are however expensive and time consuming to run, and make special demands on physical resources.

Programmed learning is an individual self paced method involving rapid and detailed correction of the student's response. Its popularity has somewhat diminished recently due to costliness of programme preparation, lack of flexibility, inability to deal with original responses, low popularity and tedium for able students, and lack of available programmes at higher education level. It may have some uses in certain special circumstances.

Reading is still probably the major learning resource in most cases, and it is therefore important to give helpful information to students about which books to read for given purposes. Booklists need to be sectionalised and annotated, and full details given. Libraries and bookshops should also be kept informed of recommendations in order to ensure supply.

Guided study takes the booklist one stage further and develops it into a set of assignments in which learning objectives and target dates are specified, together with required reading. The teacher's role becomes that of personal tutor, problem-solver, and assessor of achievement. The 'personalised system of instruction' (PSI) is perhaps the best known form of guided study. This model also involves the regular use of tests to help the student assess when he has 'mastered' the material.

Peer teaching involves the use of students to teach other students of comparable age and experience. This can be done in a variety of ways. The active role for the student implied by this method facilitiates his own learning, enhances the development of his social skill, and improves overall teaching efficiency.

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More Independent Methods: II

Practicals

Practicals and laboratory work make heavy demands on space, equipment, and student time in higher education. They are therefore being subjected to critical scruitiny at the present time, both in the way in which they are organised and in their value to the student. Students have traditionally been required to conduct practical work which supplements and is to some extent synchronised with lectures and tutorials. The common pattern is for students to work from laboratory sheets which outline the main aspects of the experiment, to follow the general direction given in the sheet, and individually to write up a formally structured report for marking by the lecturer.

It is heartening to observe that many science and engineering departments in universities and polytechnics have already moved away from this towards what they believe to be a more imaginative and cost-effective approach. They have questioned many of the basic assumptions and procedures. For instance, need practicals be linked to lectures? Might they not become the central focus of undergraduate education with lectures and tutorials, to back them up rather than vice versa? Cannot students design and conduct their own experiments? Is learning by discovery more beneficial than by didactic instruction? Might there be some value in students writing group reports rather than individual ones? Are traditional laboratory reports, as exercises in written communication, relevant to the career needs of the students?

Questions of this type have led many departments to make a critical examination of the nature and purpose of the practical work they demand of students. In response to the question 'What are we trying to do anyway?' they have come up with aims such as the following:

1 to teach theoretical material not presented elsewhere
2 to illustrate and amplify lecture material
3 to develop manipulative skills

4 to familiarise students with instruments and apparatus
5 to familiarise students with the design and construction of experimental equipment
6 to develop observational skills
7 to develop skills in gathering and interpreting data
8 to develop a concern for accuracy
9 to develop skill in communicating experimental results
10 to develop the ability to write coherent and well argued reports
11 to develop the capacity for self directed learning
12 to encourage independent thinking
13 to stimulate thought through experimental interpretation
14 to develop the students' skill in problem solving with a wide number of variables and many possible solutions
15 to encourage enterprise, initiative, resourcefulness
16 to develop personal responsibility and reliability for experimentation
17 to develop the ability to work effectively as a member of a team.

Although this is by no means a comprehensive list of aims it is probably broad enough in cross-section to serve as a focus for the examination of priorities and course effectiveness in laboratory work. However, there are two prior questions which might be asked in respect of these aims: is their achievement an essential part of the course?; and are there more economic or effective ways of achieving them? For instance, it may be that in some subjects much of the work in the development of skills and techniques in laboratory activity is no longer carried out in industry by 'apprentice professionals' but by technicians. Again it is possible that some of the aims could be more effectively and economically achieved by using audio visual techniques such as those used in the audio tutorial system for biology students at Purdue University (Postlethwaite et al, 1964). It is possible that such a critical examination of the aims and techniques of practicals could lead to economies in equipment and time, and also to a rationalisation of the use of practical teaching which would concentrate more on those areas of educational achievement which are most relevant to student needs.

Further scrutiny of these aims might reveal that they fall into a sort of hierarchical pattern. Whilst the first two aims would appear to be achievable through the use of the various audio

visual systems, the next group, ie aims 3 to 8, definitely demand some first hand practical experience by students. Aims 9 to 12, however, might well be achieved through a library project or syndicate work (see Chapter 3). The remaining aims probably relate more specifically to project work, for they seem to embrace a much more complex set of skills and attitudes than is achievable through simple experiments. fieldwork or workshop activities.

An analysis similar to this has led some teachers (O'Connell, Penton, and Boud, 1974) to design a course which starts with short single concept experiments to deal with aims such as 1 to 8. This is succeeded by longer open ended or project type experiments for the higher level aims. Students arranged in pairs were given a choice of several experiments which had been streamlined so as to relate to only one, or at the most three, primary aims. For example, in an experiment on the identification of a spectral line, the spectrometer was fully adjusted and focused so that the students could immediately observe the desired spectrum without becoming involved in manipulating the equipment. Moreover, students were not expected to write up an experiment unless they wished to fulfill the aim to train students in report writing. Students were also asked to complete feedback sheets at the end of these experiments in which they commented on the difficulty, interest and relevance of the experiment, the time taken to complete it and on how far the experiment fulfilled the specified aims. The higher level aims were tackled subsequently with project type experiments. It was found that this kind of introductory course could develop a much more positive attitude towards the laboratory work than is customary, firstly, because a great deal of the time wasting of traditional laboratory experiments had been cut out by specifying a limited number of aims, and, secondly, by offering the student an opportunity to arrange his practical work according to his own perceived needs. This type of laboratory course has obvious potential for further development.

At Birmingham University the unit laboratory system handled large numbers of students by dividing them into small groups each passing from one unit to another as the year proceeded. In each unit laboratory the teacher has several responsibilities for a group of students and may arrange the work in a way that he and the students find most suitable. The work passes through three phases: a phase of instruction in basic techniques; a phase of experience when the students practice the techniques in several

situations; and a design phase in which the techniques are applied in an open-ended way (Nuffield Group Newsletter No 5).

However, it should not be thought that the only current innovations in laboratory work are in attempting to separate practical work into experiments which develop simple skills on the one hand and projects relating to attitude and more complex skills on the other. It is not uncommon for laboratory work to be devoted to developing skills in problem solving, experimental design, professional role playing and communication. In respect of the last two skills Christopherson (1967) has suggested that engineering laboratory reports could take the form of a consultant's report to the lecturer acting as a client; a commercial brochure describing the operation and value of a piece of apparatus; or even the scenario of an educational film with appropriate visual material.

There is no reason why laboratory experiments should be on established pieces of experimental equipment. Open University students in the Technology Foundation Course are asked to design, build, load and test a load bearing structure which they themselves have constructed with balsa wood; the construction is later subjected to competitive destructive tests. The students are also involved checking compatibility of materials, resolution of forces, analysis of structure, aesthetics etc. Whatever skills are seen to be important in practical work it would appear that there is a definite trend away from students learning through didactic instruction towards learning through discovery. This means that the teacher's role is changing from that of pedagogue to that of participant in the learning process.

One of the incidental outcomes of limited resources and large numbers of students has been that practical work is frequently carried out by students in small groups. Although small group work is usually considered to be the province of social sciences and humanities, it nevertheless frequently occurs in laboratories and if properly capitalised upon can in fact help to develop several of the higher level skills previously described, such as inter-personal communication, working effectively as a member of a team and undertaking corporate responsibility. In some institutions students are brought together in larger groups or syndicates to present and compare their experimental data, to defend it against arguments from other students, and to discuss the implications of the work for wider application, perhaps in related fields. Some teachers argue that the existence of large laboratories and expensive equip-

ment, and the opportunities for flexible and open ended experimental learning which they afford, warrants the allocation of practical work to block periods on the timetable. In this way students and teaching staff can engage in a flexible planning of the learning situation and can congregate or separate, work individually, in small groups or a whole class, break for coffee and so on, without the constraints of a formal timetable.

Thus far it might appear that practicals are appropriate only in science and engineering studies. What of other disciplines such as law, economics, history, sociology etc: are there, or should there be practicals in such areas? When one looks at the value of practicals from the point of view of the student it appears that they offer an opportunity to apply knowledge and associated skills to a real or simulated problem. In doing practical work the student can come to grips with concepts and principles and reorganise them within his own frames of reference. If that is so then there might be a case for incorporating the essence of practical work in disciplines other than science and engineering. In most cases this would not demand any specially allocated space. Work of this type is already undertaken in sociology, where methods courses adopt a mini-project approach (Wakeford, 1968). Similarly Michael Zander (Nuffield Group Newsletter No 2) involves his students in field surveys on various aspects of the functioning of the legal system, eg studying the awareness of tenants of their rights under the rents acts; reviewing the extent of compliance with the laws of consumer protection of window advertisements in retailers' shops. Zander collates and publishes the results of the students' fieldwork in appropriate journals. The main benefits to students are in terms of their participation in a published study early in their legal training, their experience in taking part in a substantial piece of research, and their opportunity to see for themselves the law in action. Perhaps the advantages of practicals might in the future be extended to other subjects through workshop sessions and projects.

By the same token practical work in science and engineering should not be seen to be confined solely to experimental laboratory work. Examples classes, similar in principle to workshop classes in social science subjects, do demand the application of principles to the solution of problems. Here again the value of arranging students in groups focused on a common task should not be ignored. There has often been a tendency for the examples set

in these classes to be of a naive or academic nature concentrating solely on a small aspect of the subject which has recently been taught in a lecture. However, there might be a case for enlarging the role of examples classes by organising them more in the style of some of the practicals described above. Such a development might set more student time free and also release more laboratory space for other use.

In engineering, drawing office classes usually feature as an important element in the curriculum. They are seen to be of value in developing students skills in putting together a great deal of technical information, in problem solving and in the communication of three dimensional ideas in a two dimensional plane. However, one element which is frequently omitted, if not in intent then in practice, is the development of creative thinking which the Hale Report (1964) claims 'ought always to be present'. Creativity in design is frequently neglected at the price of conformity to standard procedures. Moreover, rather than performing an integrating function in an engineering course, design is often taught as a separate subject to the academic exclusion of other specialisms.

Practical work offers a unique opportunity for students to draw what they see as valuable from the more abstract side of their academic work and use it in a context which has some relevance to the way in which knowledge is created or acquired, interpreted and communicated, and utilised. In this way it has the potential for achieving a high level of 'process' learning as opposed to 'content' learning (Parker and Rubin, 1966), and this potentially has the great merit of activating the creative imagination of both teacher and taught.

Projects

Strictly defined, a project is something projected or proposed for execution–a plan, a scheme, or a proposal. But in education, the word is used to describe an integrated programme of work built round a central situation or idea. Projects are becoming increasingly favoured in higher education for the reasons outlined in this note; teachers may wish to consider the possibility of using project methods to further their educational aims.

Projects commonly have some or all of the following characteristics:

1 They involve the solution of a problem often, though not necessarily, set by the student himself.
2 They involve initiative by the student or group of students, and necessitate a variety of educational activities. These activities are usually devised by the student with guidance from the tutor.
3 They result in an end product (thesis, report, dossier, design, plans, computer programme, model, oral report).
4 Work often goes on for a considerable length of time – ranging from a single afternoon to three years.
5 Teaching staff are involved in an advisory, rather than a didactic role at any or all of the stages – initiation, conduct, and conclusion.

Projects differ from exercises in that the outcome of an exercise is predicted, often in detail, by the tutor and is under his control, whereas in a project the student is responsible for making decisions which affect what he does. In fact, some would liken project work to research and therefore encourage students to share facilities with research students. Project methods are attractive because, firstly, not only do they make learning active, rather than passive, but they also make the student responsible for his own education. They recognise that students are adults, relying upon a relationship of co-operation between teacher and student and negating the 'de haut en bas' attitudes of teacher to student which can sometimes be implied by other teaching strategies. However, it should be recognised that not all adults flourish in a state of individual learning. Many need group support and interaction in order to sustain their interest and develop their ideas. Secondly, projects provide a method whereby knowledge from different disciplines can be combined. They permit and encourage the students to broaden their education beyond the conception of their tutors, giving scope for inventiveness and originality, and for the redefinition of intellectual structures. Thirdly, projects permit a student to look deeply into a field of knowledge. If a teacher guides a student towards a project in the field of the teacher's own research, opportunities for discussion between teacher and student multiply. Students become interested and excited by the techniques through which knowledge is generated and handled. It is thus possible for a skilled tutor, by advising on the use of these techniques to supervise a project in an area for which he has no *subject* expertise. Fourthly, project methods offer flexibility. Not only do they recognise the different speeds at which students work (acknowledging that some

students think deeply but not quickly – a quality not recognised by traditional unseen three hour examinations), but they also draw upon different interests and personal motivations in study.

The content of a given project will, of course, depend upon the discipline in which it is being used. But whatever subject is being studied projects should generate involvement, develop skills for independent and group work, provide feedback to the student on his ability to communicate and cope with real problems, and thus hopefully motivate him to do something about them.

The methods of project work, too, will depend upon the discipline. But the following points have been found important in several disciplines. First, students should be actively involved in the choice of the subject; this increases their involvement with the task. Secondly, the student should be encouraged to discover for himself the implications of the constraints which inevitably determine what it is wise to attempt – whether these be constraints of conceptual fruitfulness in the discipline, availability of resources (library information), or institutional arrangement. It is a delicate task for the tutor to strike a balance between over direction of a student's work (which can destroy the distinctive benefits of project methods) and under direction (which can lead the student into muddle and frustration). Thirdly, some teachers have found that a student's enthusiasm is closely related to the production of documents – high at the beginning (when an outline and bibliography are being prepared) and at the end (when the final presentation is being fabricated), but low to the point of despair during the period of gestation. It has been found wise to arrange an input of teaching (presentation of ideas at a seminar, brainstorming session, simulations, discussion of rough draft, etc) in the middle of the lifespan of a project and not just at the beginning.

Assessment is the most problematical aspect of the project method. It is difficult to compare students when each is doing something different from the others, and the more so if groups of students are collaborating on a joint exercise. It is not that teachers cannot recognise good work when they see it; the problem is to decide what aspect of a student's performance to assess (formulation of problem, originality in execution, etc). A solution to many problems is to make project work pass or fail but this does not recognise quite obvious differences between students' achievements and the benefits which have accrued to them in doing the work. Some teachers have found a checklist of assessment

criteria useful in arriving at an award of degree marks. Such a list might distinguish between *exposition* (accuracy, clarity, readability); *understanding of the literature* (adequacy of referencing, ability to relate different sources, skill in finding new sources); *originality* (examples cited, treatments of ideas, proofs, generalisations); *scope of topic* (conceptual difficulty, technical difficulty, coverage, relatedness to leading ideas in the discipline).

Some courses in higher education are based entirely on project methods, but many teachers may prefer to use projects as one technique among many, particularly in view of the difficulty of assessing them reliably. Projects do, however, generate tremendous enthusiasm among students and it has sometimes been difficult to prevent students spending more time than they can afford on their projects.

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Tutoring, Counselling and Student Problems

In British universities it has been traditional to regard counselling under a variety of names, such as 'pastoral care' or 'moral tutoring', and as part of the teacher's role. When higher education was the prerogative of the few this was often done largely on the basis of a drink with students and entertaining in college rooms where the affairs of the world were discussed and solved every evening. On this basis relationships were established between tutor and student that would allow some form of counselling to occur incidental to the teaching role. With the larger intake of students and the increased size of academic staffs in higher education the situation has radically changed. In the last few years it has become clear that some other form of counselling has to be developed if students, especially those at risk, are to derive full benefit from their years of higher education. Counselling is now a recognised need.

Although students are adult in law they still must contend with the difficulties involved in the transition to higher education and the task of growth to full adulthood. The growth to maturity still involves changing identifications with people other than parents; problems of love and sex; peer relationships; ambivalence about choice concerning their discipline and place of study; adjustment to the institution; the traditional desire of youth to change everything, especially, institutions and their policies and practices; even society itself. Most students will be away from home for the first time and although they welcome this they do not always find it easy to cope with the transition from their own family, class and school to a new and less structured position in college. New study habits and attitudes, changing expectations of life and peer relationships make new and heavy demands. Even for mature students there will occur stresses due to the typical loneliness of academic study and the constant anxiety that one could or should be studying.

Case A*

Fay went to the student counsellor in a state of acute anxiety, in her first term at college. She was due to produce a seminar paper for the first time and was petrified by the tutor and the other students who, she felt, were all cleverer than she. She was bound to blush, or forget what to say, and she was scared they would laugh at her. She would not allow the counsellor to talk with the tutor because that would make her even more self conscious in the seminar, and in any case she didn't want allowances made for her, feeling she ought to be getting over her shyness problems herself. She had not slept for a week, despite taking tranquilisers.

Two other students in the next two weeks, from the same seminar came in with the same problem, as their turn to present a paper came round. None of them would talk to their fellow students or their tutor about it, feeling too ashamed and frightened. The counsellor knew the teacher concerned to be a man who though academically strict, was scrupulously fair in his dealings with students, and was always ready to 'make allowances' on the recommendation of a counsellor or doctor. However his seminars, judging from these three reports, were run in such a way as to stimulate competition rather than cooperation, and bred in the students the misconception that they had to be academically brilliant to be acceptable. The counsellor helped each individual in a very limited way by rehearsing them, and reassuring them that the teacher really wasn't an ogre. But these three cases raise questions about how improved and personalised teaching methods, using peer support, might prevent the need for counselling, and incidentally help adolescents on the road to self confidence.

During the last five or six years interest in counselling in higher education has replaced the formidable resistances to counselling which formerly existed. The danger now is that counsellors will be expected to accomplish more than they are capable of

* This is one of four cases presented in this chapter which illustrate some of the problems a student might bring to a counsellor. Readers might care to consider each of these cases, or better still talk them over with other colleagues, counsellors or even students. A serious problem in many institutions is the lack of communication among those sharing a common concern for student welfare.

accomplishing. Recent studies show that neither teachers nor counsellors can fulfil their respective functions alone acting in isolation. Counselling seeks to involve students in the improvement of their social and learning position and can be of help to tutors and administrators in promoting the greater effectiveness of institutions. Since counselling is so new in Britain, the voice of the counsellor is not always heard as well as it might be. However, in a number of places there is cooperation between students, health services, counselling services and teaching staff. The more this can be extended the greater the opportunity for improving the effectiveness of institutions of higher education.

Peer counselling is that responsibility assumed by students for each other's guidance in personal and academic matters. Often this occurs spontaneously, but it can be encouraged by tutors in collaboration with students individually, or with the students union, and the potential of senior students to take new students under their wing is not to be underrated. Tutors and student counsellors can each improve their own effectiveness in their roles by this kind of collaboration with student peer groups. However, it can be done most successfully where each person involved has a clear understanding of at least some of the essential characteristics and fundamental concepts of the counselling process, a minimal number of which are touched on briefly in this chapter. Further reading and consulation with counsellors in post is recommended.

Student Problems and the Nature of Counselling

In Britain tutoring and counselling have traditionally been seen as one and the same process, for the tradition was developed in institutions where staff/student ratios were very favourable, and has essentially been an amateur concern. We have been less inclined to heed the (mainly American) literature, or to be influenced by the very extensive (even though not always empirically research based) movement in counselling which has existed for decades across the Atlantic. The rest of this paper will be devoted to suggesting some differences in approach.

What are the differences between academic counselling and other forms of counselling? Primarily, in Britain, tutors have been concerned with academic counselling and other aspects have been incidental. In order for a student's study difficulties and associated

problems to present themselves the tutor must seem available and sympathetic. Such problems should be helped in most cases successfully by the tutor, but not every tutor is capable of doing this work and not everyone is inclined to it. It is demanding and time consuming and can take the teacher away from research and other strictly academic work.

Tutors frequently experience difficulty in determining how tutor–student contact should be organised. That it should be organised, at least during the first year of studies is possibly best underlined by the student who said 'My tutor saw me at the beginning of the year and said "Come and see me if you've got any problems". The only trouble was that it wasn't until I'd taken my exams that I realised what my problems were'. It is impossible to prescribe a general basis for tutorial meetings across the board. Should the contact be academic or non-academic? Should meetings be regular? Should the tutor be responsible for monitoring the students' progress, encourage the student to monitor his own progress, act as his advocate at assessment meetings? Should meetings always be in the tutor's room – his territory? Should they always be on a one to one basis or is there something to be said for holding group tutorials in the hope of encouraging a supportive peer group especially in the first year?

Case B

John had handed in one essay only in the first two terms and was considering leaving college, despite his passionate interest in his subject, which he had been very good at during his school years. He missed his teacher whom he had respected enormously and felt the college teachers to be remote and unfriendly. With a great deal of encouragement he eventually talked with the teacher he found marginally less remote than the others, only to discover over drinks in the staff student bar that they were both ardent potholers. Following this, the teacher got the student together with his subject tutor in the latter's office and the three of them spent an hour looking at John's study problems. John could no longer construct the essays which used to bring him such applause at school. The material at college was presented differently; he had to forage through the literature for references which all seemed to conflict with each other; he had to form his own opinions, and compare and contrast them

with other eminent writers. History no longer filled him with excitement, suddenly it had become a drudge. The subject teacher arranged to see him fortnightly and set shorter essays, but with a deadline, encouraging him to hand in whatever he had written, however unpolished. The object was to get him writing anything, not to attain high marks at this stage. Meanwhile the potholing tutor suggested John went to see his old teacher when he next went home, who turned out to be most helpful, as he had gone through a similar experience on entering university and had almost given up after a term of mediocre output. John suddenly improved and subsequently did very well. He still finds his subject tutor nowhere near his ideal, but a friendship has been cemented with his fellow potholer.

If the transition from school to college is one which requires the student to learn new study habits there is a great deal to be said for regular group tutorial meetings in the first year to help students examine in some detail how they are setting about their learning and share their ideas on useful techniques. Books like those by Rowntree and Buzan can be of great value to students in this respect. The tutor may also find it beneficial to arrange for his tutorial students to do an assignment thus enabling him to become more closely connected with study problems than might otherwise be possible. Probably the most important function of the tutor, however, is to provide a meaningful personal relationship within the academic organisation for the student. This can effect a more powerful influence on a student's desire to study purposefully than any training in study habits.

Beyond these academic counselling tasks there are more difficult questions. Specific anxieties are inevitable, but there may be a more general anxiety state on the part of the student, presenting perhaps an anxiety about some particular part of the course, or about his social or financial situation. This general anxiety can be in one sense motivating for the student, but beyond a certain low point can be counter productive if not crippling. Involved with this there may be a feeling of failure which in some senses again can be productive, but it may inhibit the student from studying at all if his fear of failure is strong. Then there are the neuroses and the psychoses, and here one enters the field of the counsellor, the psychologist, the psychiatrist, and the student health service.

Neuroses are usually described as aspects of personal behaviour which are incapacitating or restricting but of which the person is aware. A student might for instance be in a continual state of depression and unable to stir himself into working, or may be obsessional to the point of not wishing to put pen to paper until he has sorted a topic into very tidy categories. These are neurotic escapisms which are patently non-productive. Specific anxiety about something in particular is easier to help with than chronic general anxiety which itself may begin with stresses in the student's social and emotional life, marital life, love life or any other stress situation, but develop into a general state of anxiety.

Case C

Brian was a law student who had done brilliantly according to his tutors. In his second year his work though adequate was well beneath his potential and he seemed to be losing interest in the work, attending seminars only spasmodically and participating very little, whereas normally he would hold the floor. Asked to see the counsellor he spent the first session with her discussing Freud's theory of infantile sexuality and the interpretation of dreams! It eventually transpired that all his relationships with friends, family and college were intellectual transactions and there seemed very few subjects he could not discourse upon at length. His loss of academic motivation had coincided with his envy of the other less able students who had girlfriends. His only close friend had fallen deeply in love and enthused about it. Brian began to worry that he had never had a girlfriend and became aware that he had only academic excellence to offer. Furthermore he feared, though longed for, an emotional attachment. In a long term student therapy group he improved, but his attitude change took a long time. Seeing others in the group with personal relationship problems, and being for the first time in a position to share and receive deeply personal feelings with them, seemed to enhance again his academic motivation. He was eventually able to discuss his problem with his tutor who had been very puzzled by the student's behaviour. The student asked that his tutor not be informed about his personal difficulties, of which at first, he was deeply ashamed. However, in his own time, some months later, he volunteered the information himself.

Beyond the neuroses are the psychotic states. Psychoses are not as common as neuroses but are far more serious. Many people have some slightly neurotic tendency, but a psychotic person is out of touch with reality. His own small world might be his total concern, and might be a defence against the anxiety producing source. The student might be blotting out large areas of consciousness and reality so that he behaves unrealistically, unproductively and possibly in strange unaccountable ways. Psychoses can be extremely difficult to understand and accept. They may at first manifest themselves in strange forms of behaviour. Furthermore, the student with a psychosis may be psychotic one day, and clear the next. He may be manic one day and depressive the next, or he may be becoming schizophrenic. The reader could refer to Crown, or Ryle (see references) for an introduction to neuroses and psychoses. These illnesses do not often exist in pure form so much as in a variety of combinations. However, such complicated diagnoses would apply to a very small proportion of the population and should be referred to psychiatrists. The tutor should never aspire to treating them, but should be able to identify such tendencies and know when to refer and to whom.

Where a tutor has the full confidence of a student it would, of course, be hoped that the student in need would come to him, but it is understandable that in many cases students will choose not to go to their tutors. The reason is simple. The student will see his tutor as a person who is later going to assess him, and in assessing him it might be difficult for the tutor not to take into account his neuroses or anxieties. He will see the possibilities for his tutor to denigrate him. He might have a serious and well founded fear of being allocated low status as a student.

Having said all that, there will be people in British higher education who would still contend that all tutors are counsellors. A criticism of this view is in the following: the tutor may not have the personality, understanding or patience to help with student problems. The tutor will usually be a gifted person who has not only done well at school and university but probably has a higher degree. In other words he is probably near the top one per cent or so of the community in ability and academic motivation. He may have had little experience of failure; he might be conscious of some subjective concern about his limitations, but no knowledge of real failure as a student. Tutors will, in most cases, not have a sound knowledge of neuroses and psychoses; how then can they

begin to identify the real problems presented by the student? There will be cases where the student has a need to go to his tutor and while having full confidence in his tutor may still be disappointed because of the tutor's inability to understand him. It is, therefore, very important for all tutors to have a layman's look at theories of personality and psychopathology. Having done that they should not try to act as therapist, but rather as agencies for screening and referral.

Case D

Alan was admitted to a degree course after consultation between head of school, head of department, tutors and counsellor. He had a ten year psychiatric history, having been in hospital suffering from schizophrenia (and had eventually persuaded doctors to give him a leucotomy). Apart from 'A' levels he had no professional qualifications, a very unstable family which he never visited, and no social milieu at all, having been in hospital for so long. He was admitted following agreement that he should have extra tutoring, and in the knowledge that academically he was a very 'risky' student indeed. In the first year there were problems of getting into debt, drunkenness, frequent homelessness and two suicide attempts, and much of his written work was indecipherable. He was given a place in hall, loans from the college, help with social skills by the counsellor, and medication from the health service. Tutors gave extra academic coaching, and one in particular invited him to her home and introduced him to other students, societies etc. He sat endless mock exams and extra essays in the counsellor's room to practise good study habits to reduce his considerable anxiety about written work. This necessitated much co-operation between the tutor setting and marking the work, and the counsellor helping him organise it, gauge time, improve presentation etc.

In year two, teachers and counsellors tried to help him move away from the role of dependent mental patient, and encouraged him to find his own flat; loans were refused and he was forced to take a job, and a programme was worked out to help him control his drinking. Over his three years at college he has become socialised, self sufficient and working adequately, through the joint support of various people over a considerable period of time and the student environment with which he finally identified that helped him during this difficult period of rehabilitation.

Having regard then to the limitations of tutors as counsellors, to whom can the tutor refer those students he feels he cannot help? There is the student health service whose doctors will usually have had some psychiatric training as part of their medical courses and in some instances would be well qualified psychiatrists. However, some students might not wish to go to doctors for help, because, as they see it, they have a study problem or social problem, but not a medical problem. In any institution there should be a student counselling service to work in close liaison with tutors and with a student health service. Neither the service, the tutor, nor the counsellors can have complete answers to all student problems. Between them they can build an expertise of care and attitudes that see the student at the centre; not competing but co-operating in the student's welfare.

It is possible for students to counsel each other successfully and it is desirable for a counselling service to involve students and academic staff in the counselling process. For instance student unions often have what is called a life-line or night-line service and other arrangements for the counselling of students. It is not possible for any student counselling service, on the scale that can be afforded in this country, to assist in every problem that could arise. Therefore, the student health service and the student counselling service must seek ways to involve the institution, and that means the tutors themselves, perhaps by weekly or termly meetings, to discuss different kinds of cases and situations of concern to students.

To summarise, there should be student counselling by tutors, by student counsellors, the student health service and students themselves. One also hopes there will be a psychiatrist within the student health service, and in the student union itself a facility for counselling on a student to student basis. All of these four forms of help should be explored fully by the tutor to discover which is the most suitable for a student in need, having regard to the nature of his problem. Above all they should not be competitive, but co-operative activities.

The Practice of Counselling

It seems eminently sensible that the best approach to the practice of counselling is an eclectic approach, for there are several ways

of counselling. Exclusiveness of theories is generally to be avoided. Whatever theory finds favour, there are several important concepts in the practice of counselling, which should be carefully observed. Some of the essential concepts are to be drawn from social work literature and, in fact, some counsellors will have entered the field from social work. Those concepts are as follows: the full and *total acceptance* of the student in every case, just as he comes to you, however irresponsible or unstable he seems to have been to have got into his difficulty; a *totally non-judgemental* attitude towards the student is necessary; so also is willingness, on the part of the tutor, to start right at the situation in which the student presents himself. The problem he presents may well be his underlying or real problem, or on the other hand, his real problem may emerge later and might be a much deeper problem than the one he first presents. Whatever the case, starting where the student is, in a fully non-judgemental way, is essential. The third point concerns proceeding at the *student's own pace*, since he may need to work through his problem slowly. It has to be borne in mind that to an objective outsider it might seem clear what he should do, and therefore it can be tempting to give advice, but the student may not take that advice since it might not be appropriate for him at that time. It is essential to work through the problem with the student rather than imposing a solution, remembering that everyone's experience of life is different and may not be appropriate to another. If the student is going to solve his problem he must work through it in his own time and in his own way with or without the tutor-counsellor's assistance. This can be time consuming and make heavy demands upon the tutor's patience. However, in some situations a quick or temporary remedy may be expedient in dealing with the immediate problem while leaving room for a resolution of the deeper problem.

Associated with this is the question of *self determination* on the part of the student. The student himself has the right to determine for himself what his own goal will be in the problem solving process, whether academic or social. Self determination of the individual is something that is both democratic and realistic because he must arrive at his own goals and solutions and should be expected to do so rather than having imposed upon him unsuitable or inappropriate ones. The tutor/counsellor then does not determine for the student what his problem solving should be, but should help him to discover this for himself.

The main cornerstone, however, for tutoring and counselling – particularly counselling of a personal nature – is absolute confidentialfty. This cannot be too strongly emphasised. It will possibly have taken enormous courage to be prepared to seek counselling, and the confidence that is thus placed in the tutor or the counsellor should never be betrayed under any circumstances, for without confidentiality counselling cannot proceed. If confidentiality is breached few students will come to ask for assistance and a gulf can exist, as a gulf does often exist, between the tutor and his students. It is helpful for a counselling service to know which tutors are well disposed to counselling and prepared to take responsibility in this task. Without breaching confidentiality, much can be learned from the counselling services about the institution as it impinges on students. It is thus useful to encourage joint seminars between the academic staff and the counselling services. The counselling service can have monthly or termly meetings to take stock of the kinds of difficulties the students present to the counselling services. It would be entirely wrong to discuss students in an identifiable way, but any problems that exist can be identified. Case studies or composite case presentations that do not identify students can be used in seminars between academics and counsellors. Staff can be encouraged to talk about what kinds of steps they would have taken and how they would care to be involved in helping students. In all of this the essence must be in communicating in such a way that individuals cannot be identified. A good paper on involving the whole institution is one by Jon Frederick in the 'Proceedings of the Third Annual Student Counselling Conference' (1972) at London University.

Clearly in this short chapter it is not possible to give the detailed coverage required to help people to develop into sensitive and responsive counsellors. Much sifting of theories is needed to understand what counselling is about and how it is done, and much initiation in practise to appreciate the nuances of the counselling process. It is necessary to sensitise would-be counsellors to the kinds of problems which students might have, and to the possibility that an academic problem may not necessarily be merely an academic problem. Hopefully, those who are interested in counselling will appreciate on the one hand the limitations of a short introduction such as this and, on the other, that it is useful to be sensitised to the relationship between counselling, student health, and tutoring, the problems of students, and how students and institutions exist in a dynamic relationship.

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Student Assessment

Ten years ago examinations were accepted – if somewhat resentfully – as a natural part of academic life. Now in the seventies they have become a focus for world wide student protest. Ten years ago emphasis was on the need for more trained manpower – not different but more of everything, except perhaps arts graduates. Now we are in the midst of radical rethinking about the educational needs of the future 'beyond the stable state'. Talk of the 'knowledge explosion', 'the exponential growth of technology', 'training for flexibility', 'the instability of occupations' is commonplace and has been given coherence in Donald Schon's Reith Lectures. He raises the problem of identity for us all. "If we are losing stable values and anchors for personal identity how can we maintain a sense of self respect and self identity while in the very process of change?"

Student life is itself a very significant process of change, and the development or consolidation of a sense of identity is closely bound up with the student's relationship with his subject and especially his sense of competence within it. As the subject becomes less clearly defined so the old indices of competence become more suspect. Whereas marks once made sense to students insofar as they gained respectability by being authorised constituents of the official classification system – and this aspect is still useful to them – for the majority of students now it seems traditional exam marks do not have the sort of significance which can contribute to a growing sense of identity (Siann and Pilliner, 1974; Cox, 1973).

This presents a serious problem for anyone wishing to set up an effective assessment system which will have a good effect on motivation and learning, but it suggests three important factors in any solution. One is that students should be helped as early as possible to a much better understanding of the nature of the subject as a whole, not simply in terms of a list of techniques and content areas, but through an appreciation of the kinds of problems he will meet, the sort of skills he will need to deal with them, the satisfaction he may expect, and where possible

an appreciation of the social context in which he might work. The second factor concerns the relationship between his understanding of the nature of the subject and the various indices of competence within it. There can be both real misfits – perceived and otherwise – and merely perceived misfits; both are important. Finally, it suggests the need for some expression of competence which involves more than being able to do what might be expected of any reasonable student – an area of more personal expression and involvement as in project work. In the physical sciences this is something which requires careful thought but it is not something which must be left to the third year or later.

These general points have been stressed because they are so easily put aside in the day to day rush of setting and marking assignments. But if they are not given the attention they deserve the assessments we do make can easily become the focus for problems which may not be directly to do with academic work, but concern authority and the need to assert independence from parents and their substitutes.

Difficulties with Traditional Assessments

Some of the criticisms of traditional assessment will be familiar to many teachers in higher education, for example, overemphasis on memory, factual knowledge and speed of writing and thinking, poor coverage, too great an element of luck, too much stress of a kind seldom found in later life, too little scope for originality and sustained writing, poor feedback, distortion of learning and so on. Despite the intentions of staff, and even students, many people feel that traditional exams do not give an adequate picture of the many and varied abilities which are involved in higher education. Such multi-purpose methods of assessment which try to do many ill defined things at the same time can enable students to systematically avoid demands which seem most threatening to them and these are often the ones which would intellectually rank most highly. This sort of distortion is encouraged by the often exaggerated stereotyped perception which students have of traditional exams and this in turn is encouraged by the fact that the results can be seen as the grand verdict on the students' academic worth, but instead of this verdict being based on an accumulation of evidence from a variety of settings resembling the sorts of tasks

and realistic situations he will face in later life, it is based on twenty to thirty hours writing with very high time and memory constraints–a situation he will probably never face again. Of course, this could be a good predictor of later performance but Hoyt (1965) who has reviewed the evidence found it suggested that "college grades bear little or no relationship to any measures of adult accomplishment". With depressing regularity writers in this field come to the conclusion that we do not know what we are doing. Westland (1969) perhaps put it most forcefully "I contend that at the moment we just don't know, in the scientific sense, what we are assessing. The problem is the criteria problem. We risk chaos if we don't look beyond our own navels for justification of what we are doing."

The major difficulty with a traditional exam system is that it gives so few leads on how to learn more about what we are assessing. But while it may be true that major research projects are essential for this purpose, a great deal can be done within departments once a start is made on trying to diversify our assessments so that different desired outcomes are evaluated separately. The administrative functions of assessment are simplified by overall uni-dimensional grading but they are not made more efficient (even as predictions for graduate work). Although overall assessments will differentiate students reasonably consistently the purpose of this particular way of sorting out students is too general. What is needed is a range of information about the very different abilities of students which can be used in different ways depending on why that particular selection is being made.

The feedback function of assessment again is not well served, primarily because of the lack of differentiation of abilities, but other reasons are important. The timing of traditional assessments is usually awkward for early feedback; information is often regarded for some reason as confidential; but perhaps even more important are the attitudes of staff and students. Few students (but rather more science students) regard their exam performance as an accurate indication of their ability, and staff rarely encourage discussion with students who don't seem to want it. Traditional exams can be used to direct students' efforts to important areas of the course but as we have seen they are generally not good at directing students' efforts towards developing higher level intellectual abilities to be used in these areas.

The general purpose of providing an incentive to work is often successful but carrot and stick motivation is a very dubious part of higher education and in fact conflicts with often stated aims of education which rank a love of learning and intellectual ability above all else. The distinction may not always be very clear but intrinsic motivation is generally considered more valuable than extrinsic – it can certainly make a greater contribution to the important question of identity mentioned earlier.

Assessment of Intended Achievement

Clearly many of the problems raised by traditional assessments are associated with clarifying the objectives or desired outcomes of courses. When it is clear that assessment must serve not only many types of function but many different predictive functions, the value of a profile showing individual patterns of attainment in relation to the different objectives of the course becomes very apparent. Exploration of objectives is discussed in another chapter and in fact would obviously need considerable further discussion amongst subject specialists, but many have found Bloom's (1956, 1964) analysis a useful starting point. One point, however, is worth making. This activity can be very helpful for students in making sense of their subject, and making sense of something which may be a most significant feature of their way of life can be a contribution to making sense of themselves. If the assessments made of students can be seen as valuable contributions to their sense of competence in relation to their subject then their intellectual and academic work can be integrated into their personal life in a more significant way. If, however, the assessments are seen merely as a means of competitive one dimensional ranking they can have little to contribute. They need to be seen as a realistic exploration of a student's intellectual competence expressed as profile of abilities each with its own distinctive pattern. In this form they could be more useful to both the student and society and more in keeping with what we know about the complex diversity of himan abilities. As yet only one department – architecture at the University of Aston – has actually abolished an established classified degree system and replaced it with a profile system. The results have been encouraging, however, and others may follow.

Diversification of Assessments

We can only give a brief outline of some of the ways in which assessment systems are being changed and diversified. Each helps to avoid some of the disadvantages of the traditional system and they can be looked at under six headings.

1 Improving Efficiency

Much of the earlier criticism focused on reliability of marking – different examiners can give different marks for the same answer in an essay exam. A major way round this problem is to limit the students' responses to ticking suggested answers. The use of these 'objective exams' is most common in medical schools, indeed it is likely that they all use them since they are extremely efficient ways of testing factual information They give a much wider coverage – hence less scope for luck – and can give a much more accurate assessment of the degree to which students have covered particular areas. The marking is completely reliable and can be done on computers with a detailed analysis of the results within hours. They are not confined to medical schools, however, and many science departments use them very extensively in the first year. It is still probably rare, however, that they are used outside science subjects although Aberdeen University has used a sociology exam of this type. Physics departments in general, and Surrey University's in particular, tend to use this method to assess more than factual knowledge but this is difficult at university level and not everyone is convinced that this is the best way to tackle it. It is important, however, to avoid encouraging atomistic rote memorising; and grouping of questions or making them follow something like a programmed text, as has been done in medicine, can be useful. There are some abilities which they cannot test, but their use can mean that other methods are used much more specifically for those other purposes without the complication of trying to assess factual knowledge at the same time. Learning to construct objective exams takes time, however, but can be rewarding apart from producing useful exams, since it focuses attention upon the diversity of educational objectives and the limitations of particular methods and can encourage staff to discuss these together. (For a brief introduction and references see Cox, 1967, 1972.)

2 Modifying Traditional Exams

Many of the modifications have been brought in to counter criticism that the old system put too much weight on memory and the ability to write quickly. These in fact could easily take the place of the ability to argue, criticise, analyse or evaluate so ways were sought to lessen the importance of memory. A number of universities, Edinburgh in particular, have long had an essay paper in finals which consisted only of one question to be answered in three hours. There was usually a wide choice and the questions were very general so it could be prepared in advance. This type has now been taken up much more generally, but as dissertations and course essays become part of the assessment system, it may in fact be superseded. Examinations where the questions, or sometimes topics, are specifically given out in advance have become more popular. In a sociology course at Essex University it was clear that this method gave many students a much better opportunity to develop their own ideas free from time and memory constraints, but for a small number the higher standards expected made it difficult for them to put down their books. Although there was an element of artificiality having to write out from memory what was prepared beforehand, nevertheless the contraints imposed by this called for different abilities from ordinary essay writing (Cox, 1975). The fourteen day exam papers used at York, Sussex, and (with longer time) at Essex are really just a slightly more formal way of including traditional course work in the final result. But since they come at the end of the year, usually have more weighting and generally have a space limit of about two thousand words, they do present different problems especially for students who tend to write at great length with very little attention to structure and priorities.

Open book exams where students are allowed to take in specific books or any they wish to, are becoming even more popular now. Practically all the new universities have used this method mainly in arts and science subjects. But is seems to be popular with engineers as well; Southampton, Liverpool and Bradford have used it to good effect. In Bradford, (CVCP/AUT Report, 1969) in fact, all their finals exams in engineering are of this sort with a view to assessing "understanding and appreciation of the limitations of existing knowledge of engineering science." They believe that it had "a profound effect on the type of question, on teaching method and on students' consciousness and approach to learning.

Much less time is spent on memory work than hitherto." It is interesting that this is linked with the breaking down of subject boundaries in "the interest of the wholeness of science and engineering." A slight variation of open book exams is where students are asked to read specific chapters or articles before the exam so that similar factual information can be assumed and students can be tested more accurately for abilities other than recall.

Finally, there is a 'modified essay question' exam developed in medical general practice but probably having wider application. A clinical situation is developed and at each stage of the development the candidate writes short answers to particular questions giving a realistic assessment of clinical management and opportunity to reveal attitudes (Knox, 1975).

3 Orals

With the introduction of more open forms of assessment and the desire to diversify, the ancient form of examination through orals may well come back into fashion. In Surrey, (Elton, 1968) a physics student chooses a topic and brings books with him and is orally examined by two members of staff. This is regarded as partly a test of oral communication. At other universities oral assessment is throughout the year. At York (CVCP/AUT Report, 1969) each student will give two papers to a group and "each is judged on his ability to deliver, defend and discuss the paper orally." Perhaps the situation where only one student at a time is being assessed gets over the problem of teaching dominated by assessment. They feel that the seminars are more alive, better prepared and "more energetically conducted than ordinary seminars and the improvement has extended even into the unexamined seminars situation." In general, however, reliability is low.

4 Including Traditional Course Work in the Overall Classification

This can help to avoid both criticism of artificiality and problems of tension associated with concentrating the whole of a student's assessment on ten to twenty days work right at the end of the course. Ability to withstand this tension may have some virtue but should not have the significance it can have with a traditional system. Being fit at this time is essential and so brings in the element of luck. In many ways essays written in a student's own time often over a matter of weeks or months with open access to people and books is the most natural and most effective way

in which a student can reveal the sort of ability which will most commonly be used in later life. There is a dilemma here in that it is important to leave a considerable amount of the students' work free from formal assessment in order to allow him to feel more able to develop ways of thinking with which he does not yet feel confident. On the other hand, where courses are used for assessment they tend to expand to fill all the available time. It is important to find ways around this dilemma but the solution might involve quite considerable cirriculum revision. At York, Warwick and Sussex, students have the opportunity to discuss the essays with the tutor and to revise them before resubmitting them, and this seems to have very important educational advantages allowing students who are too conformist and afraid of taking risks to be less dominated by the fear of low marks.

From interviews, questionnaire research at several universities, and official documents from the National Union of Students it seems that course work is the most popular form of student assessment, but perhaps partly because so much is expected of it, and it has so many implications for teaching and course structure, it is not surprising that its use requires careful consideration. It is, however, the most effective way of integrating assessment with teaching and learning. Assessed essays are often taken very seriously by students and the opportunity of making written and oral comment on strengths and weaknesses and clarifying criteria and marking is most important. The Open University publication 'Teaching by Correspondence' gives useful examples of marking in different subjects.

5 Dissertations

Creative work needs time and concentrated study and traditional exams give very little scope for assessing this or indeed any personal expression for those students who find it difficult to 'be themselves' under the extreme pressure of finals. But it is now perhaps more common that undergraduates write a dissertation or a long essay in their third year and that this counts towards their final assessment. These again have great potential for use and misuse. They can be extremely valuable educationally or they can be a great disappointment. Although they have high potential for motivating students they are not always highly integrated into courses. The evidence suggests that the ability to write good dissertations is by no means the same as the ability to do very good examination

answers. They can, therefore, make an important and distinctive contribution to the overall assessment. In Newcastle (Whiteland, 1966) this was clearly shown in geography where many of the best thesis writers did not end up with a good degree. Assessment of projects is, of course, not easy especially if groups are involved. But it is difficult for them to play the significant role they can in education if they do not contribute to the degree result. Where they do the student should first learn how to cope in a situation (preferably a group situation) where the results are not too important.

At the Architectural Association School and other departments of architecture, students actually take part in the assessment of projects and this seems to be a good way of becoming clearer about criteria. In other subjects students often present a draft of the project to groups of tutors and students, and use the comments as a basis for writing the final report. There is an interesting discussion of the problems of project assessment and useful suggestions in 'A Question of Degree' (Nuffield Foundation, 1975). Other studies have shown that it can be helpful to ask students to write a section on the educational processes of project work. The significance of project work is underlined by a new development at Sussex University where practically the whole of a chemistry course is organised around a major research project, and the new University of Bremen in Germany and other continental universities are now organising all their teaching around research projects.

6 Dropping Practical Exams

The greater emphasis on research projects in science is of course another reason why the traditional practical exams are being replaced. Regular assessment of laboratory books seems to replace practical exams adequately, while the projects and particularly the practical part of sandwich courses at technological universities seem to give wider scope for practical assessment. The open ended experiments at Surrey (Elton, 1968), and many other places, in physics are an interesting variation on the normal practical, introducing a more creative element.

Setting Questions

There are perhaps not many general things that can be said about setting questions for assessment – each subject will have its own

problems but many of these problems will centre around communicating the intentions of the teacher. Students so often distort what teachers want them to do. Part of the answer may be in writing longer questions which say more, not only about what is wanted, but about what is not wanted too. Insofar as the system is diversified and students know more about the particular intentions for each form of assessment, the problem becomes less important, but when still under stress general instructions may be forgotten and it may often be useful to introduce some of the criteria for evaluating the essay in the question itself. This search for greater precision, however, may go too far and it is worth considering occasional vague questions which will reveal different ways students have of structuring situations – rather like verbal ink blot tests. These can be useful too for assessing some non-cognitive outcomes (Bloom, Hastings, Madaus, 1971).

Another useful way of avoiding mere assessment of recall when you wish to assess analytical or critical ability is to give more data in the question itself, preferably data which has not been seen (and criticised by others) before. The same data might be used for testing more creative ability by asking for possible hypotheses suggested by the data, or what additional information might be necessary in following up a particular line of enquiry. With all these 'higher level' abilities it is as well to remember that the purpose is easily distorted if sufficient time is not allowed.

Marking Systems

Not a great deal is known about the sources of error in marking but they will obviously differ enormously depending on a particular situation. In the process of marking, examiners are likely to vary in such things as alertness and in attitude to aspects of students' work which may not be very directly relevant, such as handwriting or literary style; and marked divergencies between examiners have in fact been shown to be associated with these. Dental examiners in one study were clearly observing different points in awarding marks and although prior discussion on what to look for can help, it does not eliminate the problem, even in dentistry where agreements may be easier to reach than in many other subjects. The range of acceptable answers can often be wide in higher education, and any restriction of legitimate variability in the interests

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of reliability must be exposed – just as restriction of the use of more open forms of assessment for the same reason should be. Although what is very unreliable cannot be valid, the ruthless pursuit of reliability can be another way of achieving low validity.

Another source of error in marks can be the use of an unsuitable scale. Exams or questions which are too easy or too difficult give particularly high or low marks and these are generally less stable and the poor dispersion will give low discrimination. In research on rating scales an experienced rater can rarely manage more than ten points of excellence on a complex task, yet we often expect examiners to work with many more. Another difficulty arises in using simple arithmetic in adding scores from different exams. In this we assume that the difference between 70 per cent and 80 per cent is the same as the difference between 50 per cent and 60 per cent, but, in fact, there may be many more 'usable' points on the lower range than on the upper – the intervals in other words are not equal. Marking is, in effect, on an ordinal or ranking scale but is treated as an interval scale. Some studies, moreover, have shown that poor answers are less reliably marked than good answers. Marking procedures may be improved by setting up agreed comparison essays, and grading others in relation to these as described in 'Educational Testing Service Handbook for Essay Tests Level I' (ETS Princeton NJ, 1957). Such devices might help especially with problems of boredom affecting marking. (For a comprehensive study of American grading practices see Warren, 1971.)

However, the statistical manipulation of marks is far less important than the attempt to key what marks are given to a clear and differentiated conception of what is being assessed. As far as possible this should be done by differentiating questions and forms of assessment; but where one piece of work is expected to be evaluated on a number of dimensions these should be made clear and the marks kept separate. Such a system, however, needs to be treated with flexibility to avoid automatic penalties for deviation. To make explicit on an exam paper what aspects of a question carry how many marks and how the marks are aggregated can be a complicated procedure, but if they are not made explicitly they will be implicit and even more difficult to evaluate. (For an interesting discussion of the issues see Nuttall and Willmott, NFER, 1972.)

Whether or not to standardise marks from different courses

(that is, give them the same mean and standard deviation dispersion) is controversial. Any automatic procedure is suspect but all that can be said here is that if unreasonable over emphasis of certain courses is to be avoided the position needs to be carefully considered. A course which has a wide spread of marks will have more effect in degree classes than one which does not. The questions of relative or absolute standards is a difficult one.

There is a growing interest in developing individualised courses where all students are expected to achieve explicit objectives, although some, of course, will do so sooner than others. Here the assessment is on a criterion-referenced basis rather than norm-referenced. That is to say, the student is assessed according to preset criteria rather than by comparison with his colleagues. With formal or more science based courses, the standards can appear to be absolute although the choice of criteria may in fact be by reference to the standards of achievement of the student group. With less formal subjects it is difficult to set up any absolute system and the issue becomes one of deciding how the grades derive from ranking of the current group and how far these are explicitly or implicitly affected by comparisons with other groups. Where the standards are very inward looking, improvements in the quality of the entering students can be, and have been, unrecognised in terms of the grades awarded.

Wider Implications of New Methods

There can be little doubt that new developments raise serious problems both in terms of assessment and of course structure. If we are to move, as seems likely, towards more open and varied forms of assessment, there is obviously more scope for students to exploit this in terms of plagiarising or conforming in the interests of higher marks, or, on the other hand, they may use this more open situation to develop their own interests and their own individual approaches to work, less constrained by formal demands of the traditional system. Which way it goes depends very much on the attitudes of students towards their work, but equally important are the questions of overloading – leading to stress and a constricted approach – and of devising systems of assessment which do actually allow for plenty of individual expression. As we have said, wherever course work counts towards a qualification it

tends to expand and take up far more time, and if staff feel that they can merely use course work as a form of assessment without rethinking the work load then there are serious problems ahead. There may be the freedom from the artificial stress of the traditional finals and certainly research supports this, but the stress involved in attempting to meet deadlines when it seems that far too much is being asked, can be damaging to academic motivation.

Miller and Parlett (1973) at Edinburgh University have shown that the way students approach the expectations of staff – in science at least – can affect their performances. They found they could divide students into three groups: the 'cue-seekers' who actively engaged in finding out about what might influence their chances in assessments; the 'cue-conscious' who were perceptive and receptive to the cues sent out by staff but did not actively seek them; and the 'cue-deaf' – "for them it seemed working as hard as you could was the ingredient for success." They did not speak of picking up hints and did not think the impression they made on staff would affect their marks. The 'cue-seekers' performed better than the 'cue-conscious' who in turn did very much better than the 'cue-deaf'. The 'professionalisation' of examination taking seemed to pay off. If evaluation is to be educationally formative in the best sense it needs to be seen within the broader context which takes such factors into account.

Clarifying the meaning of grades which derive from different forms of assessment is not something which can be done in the abstract. It is related to individual differences, course differences and even institutional differences and we still know relatively little about these factors. Brockbank (CVCP/AUT Report, 1969) at York noticed that "if one effect of the fourteen day paper is to make students more aware of the need to control the economy of their material, the other is to increase resentment of the three hour constraint on other papers; for they know what standards they themselves can reach if they had time and opportunity." There is, in fact, a great deal of interaction between all these variables so that an examination where the questions are given out in advance in one institution may produce very different results from a similar system in another. But if over several years records are kept of student profiles giving the results of many different methods of assessment, and we have a clearer understanding of the situations in which the assessments were made, then we will have a firmer base to make decisions in the future. Time, however, is an extremely

important variable and adaptation can be slow. Schon's forces of 'dynamic conservatism', moreover, are at work in education as they are in other areas of society, and they can be equally distorting of the value of innovation. Although we pay more attention – or lip service – now to the need for flexibility and encouraging life long learners we often train our students to work in conformity to tight structures and imposed standards which are neither clear nor accepted. If we are to take the development of independence seriously, students may need to take much more responsibility for establishing the criteria for judging their own work, and for devising ways of showing that they can live up to standards which will mean something to them in the future.

Summary and Conclusions

It is now widely accepted that the variety of educational aims in higher education call for a greater diversity of reliable and valid methods of assessment than have been used in the past, and in many institutions traditional unseen essay examinations account for only half or less of the degree assessment. This diversity has led to the need to disperse the assessments over a much longer period of the course partly because of the nature of the assessments and partly to avoid the tension created by periods of intensive work. This has made it very difficult to maintain a significant level of written work which does not count for assessment – such work tends to get neglected. Frequent formal testing is widely seen as too directive. Since assessment is important for feedback and learning there is now, therefore, a need for greater integration of graded work with learning.

The virtues of ungraded work such as the freedom from excessive anxiety – which often contributes to a restricted, conformist approach – and greater opportunity for personal expression and intellectual development, need to be encouraged in graded work. A promising way of doing this is to reduce the threat of assessment by encouraging the opportunity for discussion of plans and drafts so that more risks can be taken and a more co-operative relationship with staff, and other students, is achieved. Criticism becomes a tool for improvement rather than something to be avoided or repudiated. The use of tutor and peer contributions to the learning process needs to be analysed and evaluated if integrated learning

and assessment is to be compatible with individual assessment. This encouragement of reflection upon the learning and evaluation process is in line with moves towards lifelong education and independent self evaluation.

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Educational Objectives

The next two chapters are both concerned with aspects of systematic course planning. This chapter considers the writing of educational objectives, the next how those objectives might be used in the designing of a course. Any attempt to write objectives and to design a course is unlikely to be successful if it is undertaken in a spirit of simply following instructions or applying formulas. Every course and every teacher is unique; so are the purposes and circumstances for which course analysis is undertaken. Therefore no step by step guide to course design is offered in these chapters but rather a review of some of the concepts and procedures a teacher might press into service when writing or reviewing a course. None of it can be taken as a substitute for the creative thought and responsible judgment required for teaching in higher education. What follows must necessarily be very condensed. Those who would like to take their reading further are referred to the reading list. Perhaps the most accessible handbook for English readers is Derek Rowntree's 'Educational Technology in Curriculum Development', which provides a thorough, if not too critical, conducted tour of the subject. Alternatives are Ivor Davies's 'The Management of Learning' or Lawrence Stenhouse's 'Introduction to Curriculum Research and Development'.

What are educational objectives?

Educational objectives are more or less precise statements of what a student should be able to do as a result of completing (part of) a course. Normally they describe what the students should be able to *do* at the end of their course that they would not do (at least not as well) at the beginning. The emphasis thus is on changes in behaviour which can be attributed to the students' educational experiences. This behavioural emphasis distinguishes objectives from course *aims*, with which they are often confused. Aims are usually taken to be very broad statements of what a

teacher intends to do and hopes that his course will achieve; objectives are statements of what *a student should be able to do*. An example of an aim comes from an Open University Course Unit 'The Human Concept': "The . . . aim of this unit is to draw attention to the characteristics of human beings which the technologist must take into account when designing a system to match its human operators and to meet the needs of its users." Two examples of objectives from the same Unit are: "1 Pick out good and bad examples of design in the devices used in the home and explain why you think they are good or bad. 2 Describe the salient features of our sensory and motor organs." Clearly the latter two examples are much more specific, and are expressed in precise terms of what the student should be able to do, and their resemblance to exam questions is not coincidental.

Often teachers, when asked what their objectives are, tend to make statements more akin to 'aims' than to 'objectives'. The specification of objectives clearly requires very much more analysis of subject matter than do aims, and this may account for this tendency. The simple statement of aims, while focusing the lecturer's mind to some extent, is unlikely to bring the various advantages (and disadvantages) derived from systematic setting of objectives. Objectives can be stated with varying degrees of precision and detail. The second example above, for instance, could be broken down into a number of sub-objectives by being more specific about what we mean by 'salient features' in relation to all the various (named) sensory and motor organs. How far you may wish to pursue this breaking down process is a matter of judgment, depending to a large extent on the purposes for which the objectives are to be used. However, at the level of higher education, it is likely that the complexity and range of the subject matter will make it unpractical to be highly specific quite apart from the concomitant danger of over specification and loss of flexibility.

Some objectives may be prerequisites for the achievement of others, and may relate more to the general teaching strategy or sequence of learning that is chosen for a course. For instance, it may be decided that students should have a sound grasp of statistical theory before they are asked to plan complex scientific investigations. So an intermediate objective may be set, eg, 'each student will develop the ability to calculate the probability that two sets of figures come from different populations'. Such

objectives are to enable the student to do something which has been described as an object of the course. There may be other paths to the same goal, so the statement of these intermediate objectives may already be implying a decision about the method or at least the general strategy whereby it is hoped students will reach the final objective.

Where do objectives come from?

Sources of objectives can be classified in a number of ways. There are perhaps three primary sources:

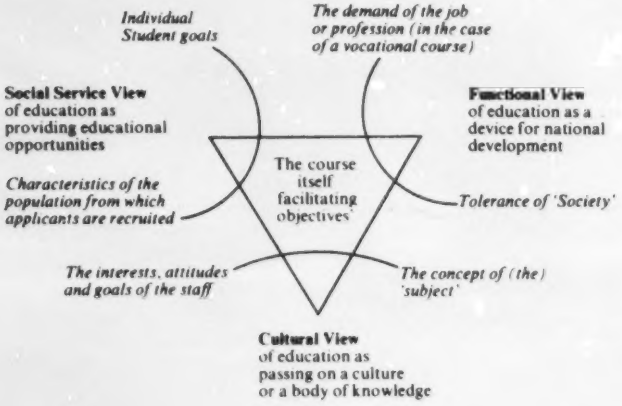
1 the subject matter and the interest and perceptions of the staff who teach it;
2 the requirements of the profession (or social role) for which the student is being prepared; and
3 the desires and abilities of students themselves.

These three sources accord with three views of education: as part of a process of passing our *culture* from one generation to the next; as a *functional* device for producing qualified manpower; as a social *service* providing opportunities for citizens. All courses will have objectives from all three sources; it is only when objectives from different sources conflict that a decision must be made as to which view of education prevails. Under those circumstances, a course can serve only one function, and confusion arises if that choice of function is not clearly made and the consequences consistently applied in making decisions about the course. There is a fourth source, namely the course itself, which is no less important; indeed on occasion the objectives derived from it can assume preeminence. Their purpose is usually in helping the students to operate happily and successfully within the course as it is run. They might be termed 'facilitating' objectives, and examples are: being able to find information efficiently in the library; being able to work with the staff and other students; developing examination techniques; feeling free to contribute to group discussions, and having some skill in doing so effectively.

The various sources of objectives are represented diagramatically in Figure 1. For a rather more detailed treatment of these ideas see Warren Piper (1975). It need hardly be said that any particular objective may not fall neatly into one of the four categories

described. Nor does the categorisation provide an answer to the philosophical question: what *should* the objective of higher education be? However, it can facilitate discussion of that philosophical question and the policy decision that arises from it for every course.

Figure 1: The Sources of Educational Objectives


Individual Student goals
The demand of the job or profession (in the case of a vocational course)
Social Service View of education as providing educational opportunities
Functional View of education as a device for national development
The course itself facilitating objectives
Characteristics of the population from which applicants are recruited
Tolerance of 'Society'
The interests, attitudes and goals of the staff
The concept of (the) 'subject'
Cultural View of education as passing on a culture or a body of knowledge

What different kinds of objectives are there?

Perhaps the simplest way of categorising objectives is to make a distinction between those concerned with the acquisition of *knowledge*, those concerned with the development of *skills*, and those relating to the growth of *attitudes*. Although simple and widely used, such gross divisions are severely limited as becomes apparent once the practical aspects of course planning are considered. There is a difference, for instance, between testing whether a student can recognise something when he comes across it or can recall it with no prompting. Psychologically 'recognition' and 'recall'

are different processes, although both are forms of 'knowing'. Nevertheless this crude division does have its uses; reminding us, for instance, that skills need to be actively practised. On the other hand, attitudes and values may be learned perhaps only a little from specific classroom activities but much more from the values implicit in the whole course and attitudes of teaching staff and the student's peers.

The most often cited classification of educational objectives is that written by Benjamin Bloom and his associates (1956, 1964). It is an elaboration on the simple three category system given above, but described by him as 'domains': the cognitive (knowledge and intellectual skills), the psychomotor (physical skills), and the affective (feelings and attitudes). Bloom has so far published classifications only in the cognitive and affective domains, although a spirited attempt for psychomotor objectives has been produced by Simpson (1967). Bloom sought to arrange objectives by levels and complexity. In Figures 2 and 3 those at the top of each list are supposed to be the simplest: the associated verbs are the terms in which objectives might be written. The figures are simplified

Figure 2: Cognitive Objectives and Associated Verbs

Bloom's classification	*Associated verbs*
Knowledge	write; state; recall; recognise; select; reproduce; measure
Comprehension	identify; illustrate; represent; formulate; explain; contrast
Application	predict; select; assess; find; show; use; construct; compute
Analysis	select; compare; separate; differentiate; contrast; break down
Synthesis	summarise; argue; relate; precis; organise; generalise; conclude
Evaluation	judge; evaluate; support; attack; avoid; select; recognise; criticise

versions of those given by Davies (1971). Blooms's work has been subjected to frequent criticism mainly on the grounds of lack of conceptual clarity (Peters 1969; Ormell 1974). Moreover, Bloom himself recognises that the distinction between cognitive and affective is a convenient artifact, and that thinking and feeling are closely interwoven in human behaviour. However, it has proved a valuable first step in the attempt to provide structure in the amorphous area of defining educational goals, and is still a useful source of ideas for those setting out on the difficult task of specifying objectives. Other ways of classifying objectives have been suggested, eg Stones (1972), Ormell (1974). A useful summary of some of these can be found in Rowntree (1974).

Figure 3: Affective Objectives and Associated Verbs

Bloom's classification	*Associated verbs*
Receiving	listen; accept; attend; perceive; be aware
Responding	state; select; answer; write; derive
Value	accept; increase; participate; attain; decide
Organisation	relate; associate; find; form; select
Characterisation	change; demonstrate; judge; identify; decide

How should objectives be written?

The short answer to the question is: in the simplest way possible to communicate your intentions unambiguously to your chosen audience. Unless the purpose of writing the objectives is clear it is impossible to judge at what level of generality they should be written, or how much may be assumed by them, or what language is appropriate. Objectives will differ in their wording according to whether they are part of a plan a lecturer is making for himself, or a brief for members of a teaching team, or an explanation to students of their course, or a submission for funds, or part of a course evaluation exercise, or part of a student recruitment campaign. The tool must be fashioned to suit the job in hand.

One useful rule of thumb suggested by Mager (1962) is to have three elements included in an objective: a statement of what the student should be able to do, the conditions under which she or he is expected to do it, and some indication of the level of competence or accuracy required. An example of such an objective might be: 'each student should be able to use the library catalogue, unaided and within a reasonable time, to have identified all the pertinent references with no omissions and less that 5% misidentifications'. The words 'unaided' and 'within a reasonable time' suggest points to bear in mind during the organisation of practice sessions; 'no omissions' and 'a 5% error rate' suggest measures of success (should it seem worthwhile to assess success so minutely in that particular instance). Those readers who have a particular interest in writing detailed objectives for practical tasks, especially where accuracy is important, might refer to Miller (1962).

Attitudinal objectives can occasionally prove difficult to write. Some can be written as single statements, as for example two objectives taken from a course on literary criticism: 'it is hoped that the students will develop a desire to consider multiple viewpoints, holding their own in abeyance', or 'students should develop the confidence to make their own choice between options open to them and to take responsibility for that choice'. Other attitudinal objectives are more difficult to encapsulate and it sometimes helps to caricature the two extremes of an attitude and to say that the objective is to help the students shift away from one and towards the other. This avoids implying that all students arrive with an undesirable attitude or that the course organisers believe that all can (or should) leave with an identical desirable attitude. Examples might be: 'away from: regarding reading as a chore necessary to gain a qualification; towards: an interest in the reading which *is* the course', or 'away from: thinking of a class as an homogeneous entity with respect to eg learning pace; towards: perceiving the class as individuals with varied attributes, who may be grouped in a variety of ways to further learning processes'.

What are the advantages of writing objectives?

If education always has some purposes or objectives it seems sensible to be clear about them and make them explicit. Appropriate teaching methods may be chosen and their efficiency judged against

these prestated intentions. Likewise, the purpose of student assessment may be made clear and the validity of the methods employed demonstrated. Where admission to educational courses has to be restricted, a choice may more easily be made of those people likely to succeed on, or benefit from, a course. There is also a moral point: by writing objectives we allow those involved to discuss their desirability and we make clear those choices which have been made by the staff and have to be made by students. In the reality of the classroom, of course, the objectives to some extent become adapted to match both the perceived needs of students and the demands of the immediate situation. But this does not detract from the value of specifying them beforehand.

Having to write out objectives, and from them create some sustained set of experiences for a group of individuals, forces a teacher to think very carefully and deeply about what he is doing. Omissions, suppositions, empty routines all come to light if the task is done even half thoroughly. Using a taxonomy focuses attention on the students' future rather than the teacher's present; the course must be considered in terms of its primary purpose – the students' learning – rather than at the secondary level of the teacher's activities, or the internal theoretical structure of the subject taught. The detailed analysis and explicit itemisation of objectives releases the student from an over reliance on the staff. The systematic sharpening of a student's educational experience by a continual appraisal of its effectiveness in attaining explicit (and shared) objectives itself provides a model of self directed learning for the student. The separation of objectives from method and from course content allows the standards and outcomes of courses to be monitored and controlled, whilst staff and students are left free to experiment with method. Provided careful and continuous evaluation is undertaken, the teaching method and, to an extent, the course content can be varied first to suit the staff and students involved and second to capitalise on opportunities (as for 'live' projects) as they present themselves.

It is easier to talk and write about a course which has been systematically and explicitly analysed. Staff can discuss *in detail* what the course is about; students can be given a clear idea of why they are embarking on a given exercise (and experience suggests that if a person knows what he is trying to achieve and how to recognise success, his progress is very much faster). If desired, students can be given choices of objectives, or invited

to formulate their own, or given an opportunity of demonstrating that they can reach the prescribed standards without undertaking any further course activity. With the objectives clearly specified the teacher can have a clear brief for each single class he takes. This can enable him to react flexibly to the student without being knocked off course partly, perhaps, because he has a greater degree of confidence in pursuing his task and partly because the objectives, being explicit, can more readily be negotiated with students in order to meet their needs. In these and other ways, resources (time, space, facilities, equipment, staff, money) can be more effectively distributed.

What are the disadvantages of writing objectives?

A number of the objections to systematic planning in general, and writing objectives in particular, which are commonly cited in the texts, can be easily dismissed. It has been suggested above that the system need not be inflexible, that students need not be regimented, that their freedom of choice need not be limited. In each case, the system described can be specifically employed to produce the exact opposite. It is true that course analysis and the formulation of objectives is very hard work, mentally taxing in the extreme if well done, and, at times, tedious (always so, if badly done). Each of us must ultimately make our own judgment of whether the pay-off justifies the price. The only word of encouragement is that, like all skills, it gets easier and simpler the more you do it.

There are fears, by no means unjustified, that an explicit analysis of a course makes it easier for others to criticise the author, and to assess his intellect, his grasp of his subject, and his understanding of the processes of learning. There is also a less rational fear that a teacher may more easily be judged by results, because the progress of his students may be more easily measured. A further point is that an increased number of objectives against which to record students' progress can lead to increased paper work, and a system which can be kept up to date without adding a burden to the teacher's work may need to be designed. There is a danger that undue emphasis may be placed on well written objectives. That can have a deleterious effect on a course because it is the simplest and perhaps the most trivial objectives that are the easiest to encapsulate in a succinct statement. Another objection is that

the way in which some objectives (such as improved skills in social relationships, or adopting more realistic goals for oneself) are manifested, vary from person to person, from circumstance to circumstance, and from time to time.

There is also a danger, too, that the quasi-military metaphor of 'objectives' may smuggle in more than is intended. It may lead the unwary to treat educational objectives as though they exist independently of the student and are unmodified once attained, like land which exists before and after troops have occupied it. Also it can be said that a concentration on writing objectives in the initial phase in course planning can, with its ineluctable logic, detract from the exercise of creative imagination in dreaming up learning activities. This objection is valid but there is no reason why one should not initially concentrate one's imagination on the process of learning activities and then ask oneself 'What objectives would we be achieving as a result – are they sufficient, are they really appropriate?' In other words one needn't necessarily start off with specifying objectives but sooner or later this becomes necessary.

Perhaps ultimately the most substantial objection to education by objectives in general and to most taxonomies in particular is the value system they seem to imply. Ormell (1974) makes the point effectively, "One gets little sense of the appeal of education for education's sake and a lot of the feeling of the training of [students] to be conspicuously effective . . . One may see [Bloom's] taxonomy as reflecting in a subtle way the ethos of a product oriented society . . . One might describe the taxonomy as being predisposed to fit a pragmatic, materialistic, meritocratic view of society, in which few profound questions of value arise and in which explicit evaluation is always expected and preferred. These look uncannily like the assumptions of the old, precrisis consensus in America. But they are hardly those implicit in either the older European concept of a 'liberal education' or in more recent radical theorising about social aims of 'education for life'." One might point to a weakness in the argument: systematic analysis usually brings the course designer very quickly up against profound questions of value, explicit evaluation is not *always* expected and so on. Nonetheless the approach does seem *predisposed* to fit the paradigm and it is this feeling, or something like it, which makes many of us uneasy about embracing the system wholeheartedly even though we see the force of its logic.

Conclusion

Teaching staff deciding to write objectives as part of an approach to designing courses will be left to capitalise on the strengths of the system, as she or he sees them, whilst remaining aware of its limitations and questionable assumptions. A certain amount of ambivalence on the part of the teacher towards the system he uses may commend itself in academic circles, and scepticism has its own virtues. The chapter might properly end with a 'confession' made by David Warren Piper during a workshop on course planning: "I write educational objectives to the extent that I believe learning ought not to be left to chance and because the organisation of learning experience is so complex that (I suppose) some form of systematised notation might improve my capacity to act rationally. It allows me to isolate issues for discussion; without, I hope, preventing me from reuniting them. I do not clair to be making a definitive statement, far less dictatorially determining, the limits of my students' education: rather I write in order that I might question my own suppositions (and my judgment) and might invite others (including my students) to join me in my doubts. My course analyses are models and as such are incomplete replicas of my view of the choices I have made and the decisions which I believe I face. They are not replicas of the educational experience or course I seek to provide others. I would hope to use my analysis to make easier and more sure the attainment of those objectives which I can recognise and describe (and are accepted by my students) and in so doing release more time for educational concerns about which I am less sure and less able to articulate. If my analysis gives some indication of what these might be then it has been especially successful."

Summary

Objectives are distinct from aims and can be expressed with varying degrees of specificity. They derive from the subject matter to be taught, the requirements of professional roles, student expectations, and the intrinsic requirements of the course itself. Objectives have been classified in a number of ways, Bloom's being the best known 'taxonomy'. The most common and simplest way of grouping objectives is in terms of 'knowledge', 'skills' and 'attitudes'. Objectives should be written in the simplest way possible, congruent

with the purposes for which they are being used. Often they might be expressed in terms of: 1 what the student should be able to do; 2 the conditions under which it is to be done; and 3 the performance standards required. Objectives make educational purposes clearer, assist in the selection of teaching and assessment methods, facilitate communication about the course, help the teacher sort his own ideas out, improve course monitoring and evaluation, and help in a variety of other ways. As against this, setting objectives can be hard work, time consuming, expose teachers to criticism, increase paper work, and seem to represent hard-headed, results-oriented values rather than liberal ones.

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Designing a Course

The preceding chapter was concerned with educational objectives; this chapter is to be concerned with the process of moving from a statement of objectives to a living course. As before no recipes can be offered but an occasional concept, a list or two, and a few illustrations may better serve the independently minded lecturer.

The processes involved in designing a course

Below are listed a number of possible elements which are part of the process of designing a course. Although they may have the appearance of being steps in the process they do not necessarily follow one after the other. The order may be varied and often they must be undertaken simultaneously:

1 A way must be found of relating objectives to course activities, and displaying that relationship.
2 Learning situations and assessment methods which might suit groups of objectives must be devised. Implicit in that activity is the grouping of the objectives.
3 Some sequence of learning experience must be decided.
4 Responsibilities must be allocated and power delegated.
5 Time resources must be allotted.
6 Some system of controlling the quality of the course must be adopted.

Some of those items may seem more the concern of a head of department planning a complete undergraduate course, than of a probationary lecturer preparing a sequence of classes. However, even though the resources be limited to a duplicator and a piece of chalk, and the only people to whom power may be delegated are the students, all the elements are present in one form or another, whatever level we are dealing with.

Displaying the relation of course activities to objectives

At its simplest, all that is required is three columns labelled: 'objectives', 'teaching method' and 'method of evaluation'. An example of a simple chart of this kind is shown in Figure 1 (Beard, 1972). This straightforward approach is usually found useful by the new teacher, and will force him to think at the outset of how he will teach and assess learning in relation to specific objectives. Unfortunately, however, various practical considerations often complicate the picture. First, the subject matter of the course may be more than a simple list of topics, and may be complicated by the need for a certain amount of cross referencing. Secondly, even if the subject matter is simple, the taxonomy used may have produced several types of objectives, each with its own column, and there may be the added complication of relationships across the columns ('skills' in applying certain items of 'knowledge' for example).

Thirdly, there is unlikely to be a simple one to one matching of a teaching or an assessment method to each single objective, especially if the objectives are written in any detail. Part of the art of course design is to concoct classes or practical programmes which successfully combine the pursuit of a number of objectives. (To this end you may wish to note a number of possible teaching methods leaving the choice until possible combinations can be considered.) Likewise assessments and examinations will relate to a number of objectives which may well appear in quite different sections of the 'subject analysis'. Often it is impracticable to formally assess student progress against every single objective; some must be taken on trust, or assessed informally. In this case a fourth complication may be an additional column identifying what is to be assessed.

A fifth and final addition may be a column in which to note some of the more crucial suppositions or educated guesses which have to be made when designing a course. Most often these concern assumptions about the level of ability or likely attitudes of students at the beginning of the course. Alternatively there may be assumptions about the suitability of a particular teaching method or the helpfulness of a particular grouping of objectives. Assumptions like these may be noted in order that they may be checked at a later date; indeed they may give clues to the source of subsequent difficulties. Sometimes the entries in such a column can be simple

Figure 1: Objectives in University Education (for consideration and comment)

Objectives	*Teaching method or student activity*	*Evaluation or feedback*
Knowledge At the end of a university career, a student should:		
know the basic terminology of his subject	lectures; assigned reading; practicals; demonstration, etc	multiple-choice-question examinations; correct use of forms in essays, discussion, etc
know the principles (basic laws and concepts) of his subject	lectures; assigned reading; practicals; demonstration, etc	correct reference to laws, etc arguments; essay writing, etc
understand some of the uses to which his subject is put	contact with research, industry, professionals in own field; experiments, projects, where appropriate	informative assessment of project essays, etc
be acquainted with principles and applications of related subjects	general studies; background reading	synthesis of data from various sources
Skills University teaching in general should enable the student:		
to write coherently	essays; laboratory reports; dissertations; papers to be given in tutorials	informative assessment of those
to be verbally articulate	giving papers; effective argument in discussion groups; tutorials, etc	criticism by other students and tutors
to make his own independent judgements	meets contradictions; contrasting points of view; use of discussion to expose student's assumptions, etc	eg 'compare and contrast' questions in examinations; evaluation of arguments, etc

to obtain information efficiently	use of library, abstracts, etc.; preparation for essays, projects; open-ended experiments	informative comment on performance open-book examinations
to think creatively, imaginatively and in abstract terms	research projects; tackling unsolved problems; use of concepts in arguments, discussion	quality of writing (publication?); assessment of method in tackling problems; credit for originality
to cooperate with colleagues and other professionals in future career	joint projects; role playing; group discussion to give insight into group interactions	evaluation of student's behaviour in a group by tutors and other students
to develop adaptability, ie to cope with changing patterns of knowledge (both general technological advance and new ideas in own subject)	exposure to new ideas (not accepting everything given as 'facts')	follow up after graduation
Attitudes		
An aim in university teaching is to foster in the student:		
enthusiasm for learning	non-assigned reading; extracurricular meetings (eg science clubs)	extent of extracurricular activity posing new problems for own investigation
scholarly concern for accuracy	contact with teachers and researchers displaying such accuracy; continuous checking of own results	assign marks for accuracy in examinations
awareness of moral, social, economic, political and scientific problems of society	general studies; some projects; modern history, literature, sociology	impressionistically, from student's writing and discussion

articles of faith which go far to explain the complexion of a particular course.

Warren Piper et al (1976), suggest a charting method that takes account of these various complicating factors. They use the following column headings: suppositions; learning objectives – attitudes and values, knowledge, skills; methods of teaching and learning situations; what is to be assessed; methods of assessment. A numbering system helps to indicate the relationship between the columns. This method of charting involves somewhat greater effort on the part of the course designer but the additional analysis and information displayed is likely to be found valuable in subsequent decision making.

Devising learning and assessment methods

Once a chart has been completed the course planner then has the creative task of grouping together objectives which can be pursued concurrently, making up a varied and interesting programme of activities which can be fitted into the time available, and provided by the staff on hand within the budget allocated. There is no prescription for the task, as can be seen from the chapters on teaching methods and student assessment where the matter is considered in detail.

Sequencing events

The structural analysis of a subject usually suggests logical sequences of learning. Often an operation cannot be undertaken by a student until he has first learned to master some component (eg learning some anatomy before attempting surgery). However, there may be some differences between the logical sequences as seen from the subject specialist's view point and the sequence which is most attractive to the learner (sometimes called the psychological sequence). Mager (1961) reports on students choosing to begin a course by investigating a familiar but highly complex electronic device (a wireless valve) rather than starting with basic theoretical principles. The evidence concerning the strategy of starting a course with the familiar, and working to the unfamiliar is by no means clear cut. Sometimes attention can be gained by starting with the strange.

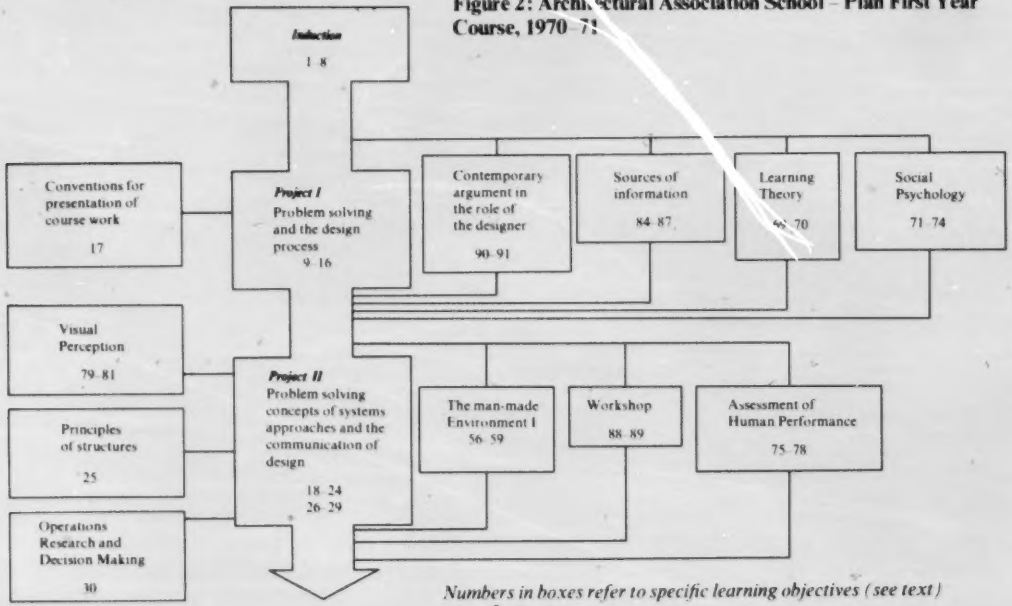
Some educational objectives involve the student in mastering a sequence of events. In this instance it may be that the sequence is chronological rather than of ascending complexity; for instance, the various stages of a scientific experiment or investigation. In such cases it is often helpful if the student learns the various stages of the operation in the reverse order in which they are carried out in practice. This ensures that the student has a clear idea of why each stage takes the form that it does. Thus the student may first learn to interpret experimental data, then learn to carry out a test, then learn to devise a test, then learn to form hypotheses, and lastly speculate about the nature of scientific problems. A more extensive discussion of 'backward chaining' is given in Rowntree (1974).

Once sequences have been chosen it may be helpful, when designing a complicated course, to produce a diagram which indicates to the course designer where he has freedom to juggle the order of things and where he does not. Figure 2 is part of such a diagram used in planning a course at the Architectural Association School. The numbers in each box refer to a list of course objectives. The general chronological sequence is from the top of the page downwards; the main teaching sequence is the projects, each of which can begin only after that preceding it has finished. On the left of that main sequence are supporting classes whose content is to be directly related to the project work. Those objectives represented on the right of the diagram are to be pursued in activities not intimately related to the project work (eg in lectures, and seminars). The lines indicate where the objectives come in the overall sequence of events. For example, objectives 56–59 are not to be attempted until 9–16 have been completed, but it does not matter whether they come before or after objectives 18–29, 75–81 and 88–89. In this way the course planner is given a clear indication of the amount of freedom he has in designing the timetable.

Allocation of responsibility

At some time or other the teaching of different parts of a course has to be delegated to the staff. Other responsibilities may also be delegated, eg the writing of objectives at the specific level working from more general statements; the choice of criteria to be

Figure 2: Architectural Association School – Plan First Year Course, 1970–71



Numbers in boxes refer to specific learning objectives (see text)

used in judging student success; the choice of teaching method. In the case of a one teacher course all these necessarily fall to that one individual, although it is possible, and arguably desirable, to involve students in the planning of their own course.

A number of strategies are open to the course leader. Here are four possible variations:

1 The course leader decides on teaching and assessment methods, arranges a timetable, and assigns *activities* to the individual staff (eg six lectures on Wordsworth deemed to lead to the specified objectives, or four lab classes in which to complete a list of set experiments).
2 The course leader lays down the criteria for judging student success (eg examinations) for the various objectives and gives a deadline for meeting them, leaving the staff to devise their own teaching methods within the general framework of a timetable.
3 The course leader gives a deadline for each objective and requires the staff to devise the criteria of success which best relate to the teaching method that he chooses. In this circumstance the course leader may ask to vet the criteria before they are adopted.
4 The course staff confine themselves to producing criteria for success and administering tests, leaving the students to devise their own learning activities or to choose from a number which the staff provides (in essence this is the strategy employed in 'personalised systems of instruction' eg the Keller Plan).

The allotment of time and resources

Frequently, on a traditional course, considerable contraints are put upon the allotment of time. All activities may have to be integrated into an overall programme which divides each day into class periods. Under such a system heads of departments usually allocate to their junior staff fixed times for various activities such as lectures, seminars, lab classes, but sometimes overlook to discuss with them the course objectives and how they might be related to the time available. In subjects with a large amount of factual content, such as engineering and the sciences, emphasis is commonly placed on 'covering the ground'. The result may be a very dense programme of lectures and laboratory classes which enables the *staff* to cover the ground but which may not ensure that the *students* do. A possible alternative (but one which has implications

for departmental administration) is for the head of department to timetable only the dates by which certain objectives should be met (as above) and then to give staff members control of a block of time (say a half a day per week over two terms, or two days per week for five weeks) within which they may plan whatever activities they see as appropriate.

Little can be said here about the allocation of resources, as each institution has its own system. We could suggest, however, that a departmental budget is drawn up at the time courses are being designed and that this financial plan is discussed with staff. Systematic planning of courses can assist in the allocation of resources, and even a very simple and tentative budget can result in a more satisfactory outcome than the system in which staff apply for funds as the need arises until the account is either depleted or is found to have an embarrassing residue which must be dissipated quickly before the end of the year. Those wishing to extend their reading on financial planning and control, and indeed of many other aspects of management in British universities, are referred to Fielden and Lockwood (1973) and Moodie and Eustace (1974).

Control of quality

One of the advantages of frequent assessment is that the success of quite short periods of teaching can be gauged. One advantage of writing objectives and closely timetabling their achievement is that a course can be corrected and improved as it progresses. A head of department may keep some control over the quality of teaching even if he gives his staff complete freedom to develop their own teaching methods, by determining the criteria against which student success will be assessed. Another advantage of writing objectives and recording the planning decisions involved in designing a course is that the changes may more easily be introduced. What is implicit is often the most difficult to modify. The explanation of the system discussed not only allows misjudgment to be more easily pinpointed but also the consequences of proposed improvements more accurately forecast and assessed.

Evaluating a course after it is over may help staff to make a better attempt at subsequent courses, but can never give the flexibility required to respond to unforeseen difficulties or compensate for errors before too much is lost. Student examination results

may be only a very rough guide to the success of a teaching programme. Attempts to follow up students after they have left a course may, in principle, be directly observing the fundamental purpose of an education course. However, how well people do in a profession or life generally will depend on so many things other than the quality of the teaching they received that results will certainly be contaminated.

Conclusion

Like writing objectives, designing a course is an art form. Apart from effort it involves professional judgments, inspired guesses, and some luck. Part of the professionalism is having a way of recovering quickly when things don't turn out as expected. Planning in a systematic way and recording decisions as they are made can help a teacher to have a second strategy in readiness. The first time a course is planned in this way it can be an exhausting and very time consuming business. It gets easier with practice partly because everybody discovers wrinkles and short cuts, but partly because it is on the first attempt that the course designer is forced to face up to decisions and value judgments which up to that moment he or she had never encountered or had successfully avoided.

Summary

Designing a course involves relating objectives to course activities, grouping objectives and determining appropriate learning situations and assessment methods, sequencing learning experiences, allocating responsibilities and delegating power, allotting time and other resources, controlling the quality of the course. Each of these elements is described and discussed. However, course design cannot be reduced to a simple set of rules; it is an art form, and involves judgment, guess work and luck.

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The Evaluation of Teaching

When we speak of the evaluation of teaching in higher education there are at least three areas of major concern: the assessment of lecturers; research into different teaching methods; and the evaluation of courses or educational systems. These *could* be discussed in isolation but if we are interested in evaluation primarily as a means of improving teaching and learning then all three are plainly relevant. If we are particularly concerned with finding some way of rewarding teaching so that staff will not feel they are damaging their career prospects by putting more time and effort into teaching, then perhaps we need to pay very little attention to the evaluation of different teaching methods as such, but it would not be wise to ignore questions of course evaluation which put both teaching and learning within the broader context of the functioning of the department and the institution. But the evaluation of courses could itself focus on different aspects each requiring a different approach. Processes could be separated from outcomes, and outcomes evaluated in terms of achievement – are the students able to do what the course was encouraging them to do – and intrinsically – is the course right in encouraging them to do it. Technical considerations may be more important in looking at performance; reflection and the analysis of values more relevant to intrinsic evaluation. However, empirical research into what professionals actually do in later life can, of course, be crucial in deciding whether a course is doing what it should be doing regardless of whether it is doing it well or badly. This raises the question of when performance evaluation is most valuable. Should all courses be evaluated during the course, at the end or some months or years later, and is meeting stated performance criteria enough to ensure professional competence?

The Role of the Lecturer

This is no place for a detailed analysis of the role of the lecturer and indeed this has been considered in detail in the rest of this

book but it may be worthwhile reminding ourselves of some of the tasks, which are now typically part of the job. One of the most important of these is the design of courses. Although lecturers will normally be immersed in teaching for a few years before being involved in course design, it does represent the logical beginning of an educational strategy. Whatever our views on defining precise learning objectives, there is plainly a need to think of courses as more than collections of syllabuses. Not only the sequencing of the content, but the skills and attitudes associated with it, are an integral part of learning, and need to be included. Thus an important aspect of course design will be to take decisions about appropriate teaching methods. If the course has been designed with care, and learning objectives go beyond simple transmission of information (and they usually do), a wide range of possible teaching methods may seem necessary. Increasingly the 'lecturer' may come to feel he is more a 'manager of learning', rather than a teacher in the didactic mould, and to focus on appropriate strategies for satisfying students' learning needs. At this stage, the teacher will probably need to consider modes of feedback both to himself and the student regarding the quantity and quality of learning achieved. Such feedback is invaluable in the learning process itself and assists the lecturer in monitoring the success of his course, quite apart from its contribution to any subsequent requirement for grading.

Having designed and planned a course, the teacher will then usually be involved in administering and running it. Almost certainly he will find himself needing to give lectures, seminars, and tutorials; develop some knowledge and skill in the use of audio visual materials and many other specialist resources; supervise individual and group dissertations and projects possibly at both undergraduate and graduate level; design simulations, role plays etc; and develop the knowledge and ability to cope with individual student differences and learning problems, since professional counsellors cannot and perhaps should not replace the ordinary lecturer in such roles. However carefully a course is planned, many of the more immediate tasks a teacher will undertake will require the sort of personal skills which are frequently under-emphasised, for instance, being able to mark and comment on a student's work constructively is very different from designing the general form of the course assessments. Finally, the lecturer needs to be able to assess his own courses and his own teaching. Again, this

might be an area where his sensitivity to teaching problems, and to the way in which his course has been received by the students, could be discussed and may be somewhat easier to assess than his actual teaching practice.

Criteria for Assessment of Teaching

In their very useful monograph 'The Assessment of University Teaching' Barbara Falk and Kwong Lee Dow (1971) give a description of what the field of university teaching consists of and summarise this in terms of the following criteria:

"1 The objectives of a course must:
(a) reflect a full knowledge of the discipline;
(b) reach the standard required to contribute to the specified degree;
(c) specify clearly the norms, knowledge and skills to be acquired;
(d) be appropriate to the previous knowledge and academic development of the students;
(e) be attainable by the students within the constraints of available time and the facilities which are provided.
2 The methods of presenting knowledge require:
(a) choice of economical and efficient means for learning, whether by lectures, teaching in carrels, programmed instruction, etc;
(b) other learning situations which have been devised (whether in laboratories, by presentation of essays or class papers, etc) to give the opportunities for understanding of norms and for the cultivation of skills that are objectives of the course;
(c) testing and examining procedures which are both valid and reliable checks of the whole range of course objectives. Such procedures should test the stated objectives and nothing else.
3 The teacher must communicate his interest and enthusiasm in the discipline and show a concern that individual students come to share it."

We may not wish to accept this exactly as it stands, but if we approach teaching from this broad perspective it is clear that attempts to work from the characteristics of good teachers would run into difficulties. Certainly at the school level this has been the case. There has, in fact, been a shift away from thinking of teacher characteristics to the question 'What is good teaching?'

At the same time there has been a move away from measurement of the effectiveness of teaching in terms of end results and towards emphasis on processes; towards unintended outcomes as well as those which are intended and enshrined in the objectives. There is perhaps now a greater willingness to accept the complexity of real life teaching situations and recognise a wide variety of inter-related factors, and it is difficult to assess one without understanding the others.

Models of Evaluation

This last point about complexity and interrelatedness sounds very obvious, but, in fact, the earlier models of teaching evaluation tended to make it rather more difficult to accept such complexity as an integral part of the teaching situation, and concentrated research on the more clear cut issues. The classical model developed from work to Ralph Tyler in the 1930s has been influential. The process would centre around six stages, the formulation of objectives, classifying them, defining them in behavioural terms, specifying situations in which they might be demonstrated together with the level of achievement, developing appraisal techniques, and before and after measurements of performance to evaluate attainment of the behavioural objectives. The difficulty with this model is that it focuses too sharply upon intentions and not enough on what actually happens. Malcolm Parlett (1972) gives a very interesting account of the problems associated with what he calls the 'agricultural botany paradigm' in relation to the evaluation of innovations and higher education. He suggests a 'social anthropology paradigm' for 'illuminative evaluation'. Here the evaluator explores the perceptions, opinions and behaviour of staff and students through a variety of methods to reveal what was otherwise hidden in the educational process. The researcher being released from the constraints of a rigid methodology is able to modify his views of what is important as his understanding of the area of research develops.

Robert Stake (1967) has developed a model which explicitly takes into account the differences between intentions and what actually happens in the three main areas of *antecedents*, *transactions* and *outcomes*. This approach might reveal interesting information such as a discrepancy between the observed and intended antece-

dents where a previous course had been a failure thus making teaching on the current course more difficult. Again observation of what actually goes on in a course, the transactions, might indicate that independent student self-help groups were producing results which were not really warranted by the teaching which was actually intended. Finally, a close look at the outcomes might reveal that the assessment procedure generated an approach to work which seriously distorted the learning and teaching. Stake's model may, however, encourage under-emphasis of the wider context, but Pace (1972) gives an excellent overview of this context, and Martin Trow (1970) considers evaluation in higher education from the point of view of the sociologist looking at latent functions and the institutional political context.

Methods of Evaluation

There are two main areas of evaluation requiring very different methods. One would be concerned with the *processes* looking at the reactions to the teaching-learning situation from the point of view of participants or observers. The other would be concerned with the *outcomes* measuring the changes which have occurred amongst the students attending the course.

The Measurement of the Teaching-Learning Process

(a) Evaluating Teaching Sessions

Perhaps the most widely used method of looking at the process of education has been student questionnaires on lecturing, and a typical example is given at the end of Chapter 2. Ruth Beard (1972) has discussed this and given more examples, and the theme has been taken up more fully by Colin Flood Page (1974) who looks particularly at the American experience of using questionnaires in the evaluation of teaching. The interesting thing about some more recent questionnaires is that an attempt has been made to look at the response on perhaps up to 10 dimensions in relation to the student's background and preparation. Westphal working at the University of British Columbia suggests that students might rate not only their own preparation for a particular lecture but their own, say, mathematical and physics background. Other more detailed enquiries might be made into whether or not the student

got lost in any particular part of the lecture, asking him to write in which part it was and which parts he found interesting or boring. Such information might encourage a lecturer to change the 'antecedents' to the lecture rather than the lecture itself.

Another way of looking at the lecturer is to use an observer; he might be a colleague, a trained observer or the lecturer himself. It is possible that colleagues are very much under-used. If you ask a colleague to sit in on one of your lectures and take on the role of critic he may begin to think about teaching in new ways and question things which he himself has taken for granted for years. What is often wanted is an occasion for thinking about teaching. It is not so much that we cannot think more constructively and imaginatively about our teaching, it is just that the occasion does not arise. There is something to be said for briefing your colleague about what you are trying to do and what he might look out for – and for not doing so, but asking him afterwards what he felt you were trying to do. In the Westphal study trained observers were used who had a check list of student responses and they would check off different aspects of the way in which students were responding to the lecturer at different times. But perhaps more useful is the use of audio, or preferably video, tapes where this can be watched either privately or in company with colleagues and students. Facilities for this are widespread in higher education but it is not clear if they are very widely used.

However, the evaluation of set piece uninterrupted lectures may become less significant as these are replaced by other methods of teaching. More recent developments in lecturing techniques which make students much more active can generate the sort of feedback to the lecturer which can make the less integral evaluation less necessary. This type of interaction was mentioned in the chapters on lecturing and small group teaching, and can vary enormously from students pressing buttons or showing coloured cards to indicate when they are getting lost, to answering multiple choice questions at intervals during the lecture. Or they may discuss issues or specific problems with neighbours before speaking to the whole class – this is a much more effective way of involving students than simply asking questions in the middle or at the end of a lecture. An even more structured situation has been used in postgraduate medical education (Mosel, 1964). After a twenty minute lecture students spent ten minutes writing short answers to the questions after which they went on to discuss these in

groups of three to formulate difficulties for fifteen minutes ending up with another fifteen minutes of general discussion. This type of situation improves student learning but it can be particularly helpful to staff in evaluating their lectures from the point of view of student understanding and should reveal student interest and involvement. Such participatory lectures may not help very directly in evaluation of teaching for probation or promotion but they should enable staff to talk rather more convincingly about teaching in interviews.

Evaluation of discussion groups and seminars is much more difficult, and the use of questionnaires may be less useful, although Gordon Lawrence (1972) gives an example of a short questionnaire which can help to generate discussion about the quality of interaction groups. With audio and video tapes there may be more chance of interference but they can, perhaps, be more useful in the case of group work than with lecturing. Many universities, particularly London and East Anglia, have been using video tape recordings as a basis for both staff and students to learn about how to improve group work, but, of course, recordings can be used purely for private feedback too. For more sophisticated group work, interaction analysis has been developed, particularly by Bales and Flanders. Brief descriptions of these and other examples of this type of analysis are given in Donald Bligh's article in 'Varieties of Group Discussion in University Teaching' (1972) and Morrison and McIntyre (1969). Such analyses are unlikely to appeal as a general method of evaluation but the categories used are interesting and their occasional use can be rewarding. Discussion of group work by the group itself can be conducted without the visual aid of a video recording, but there are often strong inhibitions when actually initiating such discussions. They can appear more natural, however, when there is innovation in the structuring and activity of the group – perhaps breaking a group of 12 down to smaller groups for different purposes. This generates a situation of comparative evaluation which is easier to initiate and develop.

(b) Evaluating Courses

Colin Flood Page's monograph (1974) goes into great detail about the use of questionnaires in course evaluation, and the Falk and Dow monograph gives an interesting example of a particular questionnaire used in physiology. When considering the use of questionnaires it is particularly helpful to have examples to look at

and as these are widely available it is perhaps not worth going into the question in detail in this paper, but an interesting feature of the physiology questionnaire (which is reproduced in full in the monograph) is the emphasis placed on evaluating students responses from different points of view. It is well known that students may see the usefulness of a particular learning experience differently if they are thinking of examinations rather than their own intellectual development. But it is very easy for this to be ignored and then there is a problem in interpretation. Falk and Dow used the following questions:

Indicate how far the following teaching methods have maintained your interest in physiology

	Level of interest maintained			
	very high	fairly high	fairly low	very low
(a) lectures	1	2	3	4
(b) practical work	1	2	3	4
(c) tutorials	1	2	3	4
(d) applied physiology/pharmacology demonstrations (Monday afternoons)	1	2	3	4
(e) hospital demonstrations	1	2	3	4
(f) Independent study from textbooks	1	2	3	4
Which of the methods (a)/(f) have you found:				
(i) the most interesting				
(ii) the least interesting				

Rate the extent to which you have found the learning methods listed in question 2 useful for exam preparation

	Use for exam preparation			
	considerable	moderate	low	very low
(a) lectures	1	2	3	4
(b) practical work	1	2	3	4
(c) tutorials	1	2	3	4
(d) applied physiology/pharmacology demonstrations (Monday afternoons)	1	2	3	4
(e) hospital demonstrations	1	2	3	4
(f) independent study from textbooks	1	2	3	4

Which of the methods (a)/(f) have you found:
(i) the most useful for exam preparation
(ii) the least useful for exam preparation

Similarly, courses might be evaluated differently by students who spend a long time on them as opposed to those who spend very little time. Such information is invaluable in course design and yet is seldom available. Again Falk and Dow give examples of questions to explore this. For instance:

Apart from timetables classes, estimate your average study hours in each subject during this term (June–August) this year

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(Place a ring around the number corresponding to your study hours per week in each subject).

					Hours per week		
	None	1–2	3–5	6–8	9–11	12–15	more
Pharmacology	1	2	3	4	5	6	7
Physiology	1	2	3	4	5	6	7
Anatomy	1	2	3	4	5	6	7
Biochemistry	1	2	3	4	5	6	7

Total Average study hours per week (excluding class time) during this term

None	1–8	9–20	21–32	33–44	45–60	more
1	2	3	4	5	6	7

Select the one alternative which best describes your present view of the importance of physiology within the entire training you are receiving in preparation for medical practice:

(a) Physiology is more important than any other subject encountered as a preparation for clinical work 1
(b) Physiology is equally important with some other subjects so far encountered as a preparation for clinical work 2
(c) Physiology is less important than some other subjects already studied, as a preparation for clinical work 3

Another interesting feature of some questionnaires, particularly the student perception of teachers (SPOT) questionnaire developed

by Gagné (1967), is the dual aspect of what actually happens and the 'expected ideal'. This gives perhaps a better indication of the student's satisfaction than questionnaires which ask for only a single rating. Some of the descriptions of the dimensions are interesting in their own right. The student has a separate answer sheet for automatic scoring and gives two responses A and B for each of the 61 questions. A typical example follows:

Nature of Feedback: this concerns the evaluation of the quality of the feedback, without regard to its frequency. At one extreme, there is the professor whose feedback is always perceived as depreciating the student; at the other, there is the one who always knows how to make negative as well as positive comments in a constructive way.

Question A: Where do you situate this course (this professor) on the evaluation scale?
Question B: Where should it (he) be situated in order that you be satisfied?

Other questionnaire designs are particularly useful at revealing the different ways students might perceive objectives of different courses. Judith Stein's questionnaire developed and used at the University of California, San Francisco, School of Medicine, is interesting in this respect. She gives ten types of course objective and asks the students to indicate to what extent they feel each was emphasised or encouraged in the course. Examples might be acquiring a body of factual information, practising basic laboratory techniques, problem solving, interpreting data or applying knowledge to the solution of problems, using and evaluating the literature or other sources of medical information. Some other more general questions are answered in terms of 1 = unsatisfactorily, rarely, never, 2 = poorly, sporadically, 3 = okay, usually, 4 = fairly well, frequently, 5 = extremely well, always, nearly always. Examples are:

How clearly were the course objectives defined for the students (eg in a syllabus)?	1 2 3 4 5
To what extent did the course stimulate your interest in the topics presented?	1 2 3 4 5
In addition to giving facts, did the course provide an organised framework for your thinking?	1 2 3 4 5

To what extent were you allowed to select your own speed, method & materials for study?	1 2 3 4 5
Were the instructors accessible for answering your questions or giving personal help?	1 2 3 4 5
How well did exams or other evaluations coordinate with the major objectives of the course?	1 2 3 4 5
Rate the emphasis of exams (1 = emphasised recall to 5 = emphasised problem solving).	1 2 3 4 5

Discrepancies between different courses have sometimes corresponded to the way the staff see their courses but sometimes they have not. The actual profile of a particular course produced by the students' ratings of objectives may be very different from that of the staff and although neither might correspond very closely to reality, nevertheless, the discrepancies can be a good starting point for a better understanding on the part of students and perhaps staff too. Information from this particular questionnaire which also has open questions, (particularly useful for exploring students' problems) has been used by departmental chairman to improve teaching and learning within the school.

In general, although questionnaires alone may be better than nothing, in practice it is best to combine sources of information about courses by using them alongside interviews, informal discussions as well as opportunities for students to write more informally about their experience. Isolated evaluations can easily be shallow, and if students are to be encouraged to think deeply about their education, they need to do it regularly and in a structured way so that each activity can reinforce the others and lead to a sense of progress. They need to feel more aware of what is happening and more perceptive in their responses if learning to learn is to become a reality. Questionnaires, diaries, individual reports on 'last week's session' and group preparation and presentation of mid-term and end of course reports, have been used together effectively to give more sense of purpose, depth and development.

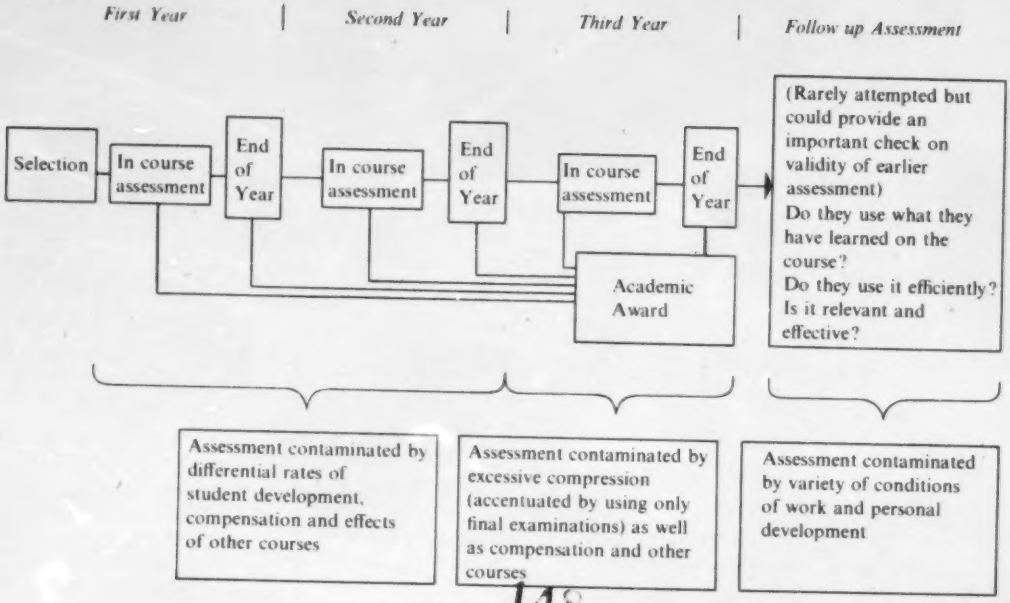
The Measurement of Change

Ultimately the success or failure of a course depends upon whether or not students change in the way desired by them or their teachers, but, of course, the relationship between this type of change and

the quality of teaching is highly problematic. Notoriously, large and small scale studies of teaching methods and teaching resources often fail to show any obvious relationship with academic performance as measured by traditional means. This is likely to be mainly due to the restricted nature of the assessment systems, but compensation for inadequate teaching must be another important factor. An added difficulty in most normal teaching situations is that there is very little pretesting so that assumptions have to be made in order to credit students with actual gains in academic achievement. In general, it would seem that pass rates and academic standards are relevant to teaching evaluation but the relationship is a difficult one to interpret. At present they are of most use simply as warning signals when there are large fluctuations over time or between similar courses. An important limitation on their use which deserves more attention is that follow up assessment is very rare and where it is done it is usually very restricted. Ideally it should cover what was used of that learned on the course, how efficiently it was used, and whether it was relevant and effective. This approach is plainly not important for all types of courses, but all will want or have some effect upon the future life of the student. Some of the issues can be set out diagramatically, as in Figure 1.

Although we might hope that more sensitive methods of academic assessment might reveal a closer relationship between teaching and achievement, studies of attitude change may in fact be more promising. McKeachie (1962) suggested that attitudes can show marked change even if academic achievement does not. Attitude measurement, however, is particularly difficult and is not as yet highly developed in the field of education. The encyclopaedic 'Handbook on Formative and Summative Evaluation of Student Learning' by Bloom, Hastings and Madaus (1971) is one of the few books to discuss this issue and yet it may be that changes in attitudes towards both learning and the student's subject, might, in the long run, be more important than changes in knowledge and low level skills – although, of course, it would be unlikely that significant attitude changes would occur without some very important cognitive changes. However, if we maintain a certain scepticism about the accuracy of some of our attempts to measure attitudes, the actual attempt to do so can in fact be a useful way to a better understanding for the sort of attitudes we are attempting to encourage. It could be important, however, not to look upon

Figure 1: The Course


First Year
Second Year
Third Year
Follow up Assessment
Selection
In course assessment
End of Year
In course assessment
End of Year
In course assessment
End of Year
Academic Award
(Rarely attempted but could provide an important check on validity of earlier assessment)
Do they use what they have learned on the course?
Do they use it efficiently?
Is it relevant and effective?
Assessment contaminated by differential rates of student development, compensation and effects of other courses
Assessment contaminated by excessive compression (accentuated by using only final examinations) as well as compensation and other courses
Assessment contaminated by variety of conditions of work and personal development

the measurement of attitude change as a completely separate activity. The less highly structured forms of student assessment can in fact reveal a great deal about the students' attitudes. Encouragement for students to keep diaries of their intellectual life and their emotional responses to their educational experience, moreover, may be particularly valuable. Although they are not as yet widely used it seems they may have an important role to play not only in enabling students to become more aware of the relationship between their education and their developing sense of identity, but as a means by which staff will become clearer about the way in which their teaching relates to the more emotional and personal concerns of their students.

Summary and Conclusions

Some of the problems of evaluation of teaching in higher education have been introduced, together with brief descriptions of some methods which might be of practical use to lecturers. It has been concerned with the ways in which academic staff may gain a better understanding of their own teaching and how institutions may make better decisions in relation to appointments and promotions and be more helpful to probationers. After looking at the role of the lecturer, criteria for assessment, and theoretical models of evaluation, various methods have been discussed in relation to different types of teaching session and to courses as a whole. The importance of variety has been stressed not only in terms of direct methods of evaluation, sucfi as questionnaires, tests, observation, and tape recordings, but in using methods of teaching which generate more active feedback and in encouraging students to reflect more upon educational processes and learning.

It is clear even from this rather brief look at some aspects of the evaluation of teaching that a very simple approach will have serious shortcomings. The ordinary lecturer wishing to evaluate his own teaching may now see it as more threatening in that it will require more time than he had expected, so diverting him from research, and may require more knowledge and skill than he is able to bring to it. This would seem to imply that the activity itself should be rewarded as an important part of teaching competence and that time, advice and practical help should be available. Some universities and polytechnics already

recognise the need for some relief of the time pressure in order to improve the standard of teaching and allow study leave for this purpose, but it may be that this will always be limited and some way of resolving the eternal conflicts between research and teaching might be attempted by enabling staff to feel strongly committed to one or the other for certain periods of time. Perhaps some subjects do require constant research commitment, but others may well benefit from an eighty per cent or ninety per cent commitment for a year or two – although this may prove administratively difficult in small departments. But if 'experts' are used in evaluation it is important that they should not be seen as researchers who work independently and produce the answers. Cooperation is essential in evaluation studies.

Not a great deal has been written on the actual processes of appointment and promotion. Falk and Dow (1971) suggest that "attention ought to be directed to: 1 records of student progress, 2 course assessment by students, 3 any available assessments by colleagues, 4 records of any (preferably semi-structured) interview along with the judgment of experts in the field of publications and on other works which may be submitted." They go on to suggest that detailed job specifications should be drawn up.

A Nuffield group on Academic Structure (1974) gives somewhat different recommendations about the sort of evidence which a teacher might cite as evidence for promotion: "(a) publications in educational or other specialist journals about teaching problems, on a basis comparable with references to research papers; (b) published or publicly available course materials developed by the teacher for student use as part of an established programme, which could if necessary be submitted for independent evaluation; (c) evidence of participation in inter-university curriculum projects, study visits, courses on undergraduate teaching and so on; (d) contributions made to relevant conferences, supervision of postgraduate theses on educational topics, and consultancy work on teaching issues; (e) external referees (along the same general lines as referees for research posts) prepared to vouch for the applicant's general contribution to the teaching of his subject." Elton, Woodbury and others discuss these issues in greater depth in a recent UTMU collection of papers which cover policy, theory and methods, and reports of a number of case studies (University Teaching Methods Unit 1975).

One promising procedure which is already in use in America

and may be relevant to promotion is called the 'personal growth contract'. The name is not very attractive but the idea is that every member of staff will draw up a plan or contract of what he intends to do in the coming four or five years. There is no prescription as to what should be in this contract but plainly if no mention is made of teaching developments this might be remarked upon. A discussion of the content and progress of such activities might not only provide quite useful information but be an important encouragement for educational innovation and improvement. But whether or not such formal discussions take place, evaluation of teaching will soon be discredited if findings are not acted upon, so it is very important that procedures be set up, first, to make sure the appropriate changes take place and, second, to stabilise and maintain the change whilst allowing for its continuing redevelopment. Such action makes great demands on those involved.

It may well be, however, that the more significant developments in evaluation of teaching will come not from staff thinking about their own courses, or from students as consumers expressing their judgments about the courses which are provided for them, but by an integration of evaluation into the learning process so that an important part of the students' learning is in fact about his own learning, coming to understand his own strengths, weaknesses, inhibitions, and style of thinking and working in relation to the varieties of constraints and opportunities presented by the course. No doubt this, too, would involve formidable problems of interpretation, but just as evaluation of students' academic attainment is being more and more integrated into actual learning activities, so the evaluation of teaching may develop away from retrospective and external judgments and more towards constant reflection on the significance of the educational experience.

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University Teaching Methods Unit, 1975, *Evaluating Teaching in Higher Education*, London: UTMU

Appendix: Recommendations for further reading

For general purposes

Beard R, 1972, *Teaching and Learning in Higher Education*, Harmondsworth: Penguin

Layton D (ed), 1968, *University Teaching in Transition*, Edinburgh: Oliver and Boyd

Nuffield Foundation Group for Research and Innovation in Higher Education: *Newsletter 1 (Feb 1973), 2 (June 1973), 3 (October 1973), 4 (April 1974), 5 (October 1974), 6 (October 1975)*

For lecturing

Bligh D, 1972, *What's the Use of Lectures?* Harmondsworth: Penguin

For small group work

Abercrombie M L J, 1974, *Aims and Techniques of Group Teaching*, 3rd edition London: SRHE

Varieties of Group Discussion in University Teaching, 1972, London University Institute of Education, University Teaching Methods Unit (new edition in preparation)

For other methods

Goldschmid B and Goldschmid M L, 1976, 'Peer Teaching in Higher Education – A Review' *Higher Education* 5, pp 9–33

Keller F S and Sherman J, 1974, *The Keller Plan Handbook*, Menlo Park, Calif: W A Benjamin Inc

Taylor J L and Walford R, 1973, *Simulation in the Classroom*, Harmondsworth: Penguin

SRHE Working Party on Teaching Methods, 1975, *Project Methods in Higher Education*, London: SRHE

Also much useful material in the various Nuffield papers (above)

For objective-setting and course design

Bloom et al, 1956, *Taxonomy of Educational Objectives Vol 1*, London: Longman

Bloom et al, 1964, *Taxonomy of Educational Objectives Vol 2*, London: Longman

Rowntree D, 1974, *Educational Technology in Curriculum Development*, London: Harper & Row

Stenhouse L, 1975, *Introduction to Curriculum Research and Development*, London: Heinemann

For assessment and evaluation

Falk B and Lee Dow K, 1971, *The Assessment of University Teaching*, London: SRHE

Flood Page C, 1974, *Student Evaluation of Teaching – The American Experience*, London: SRHE

Thyne J M, 1974, *Principles of Examining*, London: University of London Press

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For counselling etc

Ryle A, 1970, *Student Casualties*, Harmondsworth: Penguin

Newsome A et al, 1973, *Student Counselling in Practice*, London: ULP